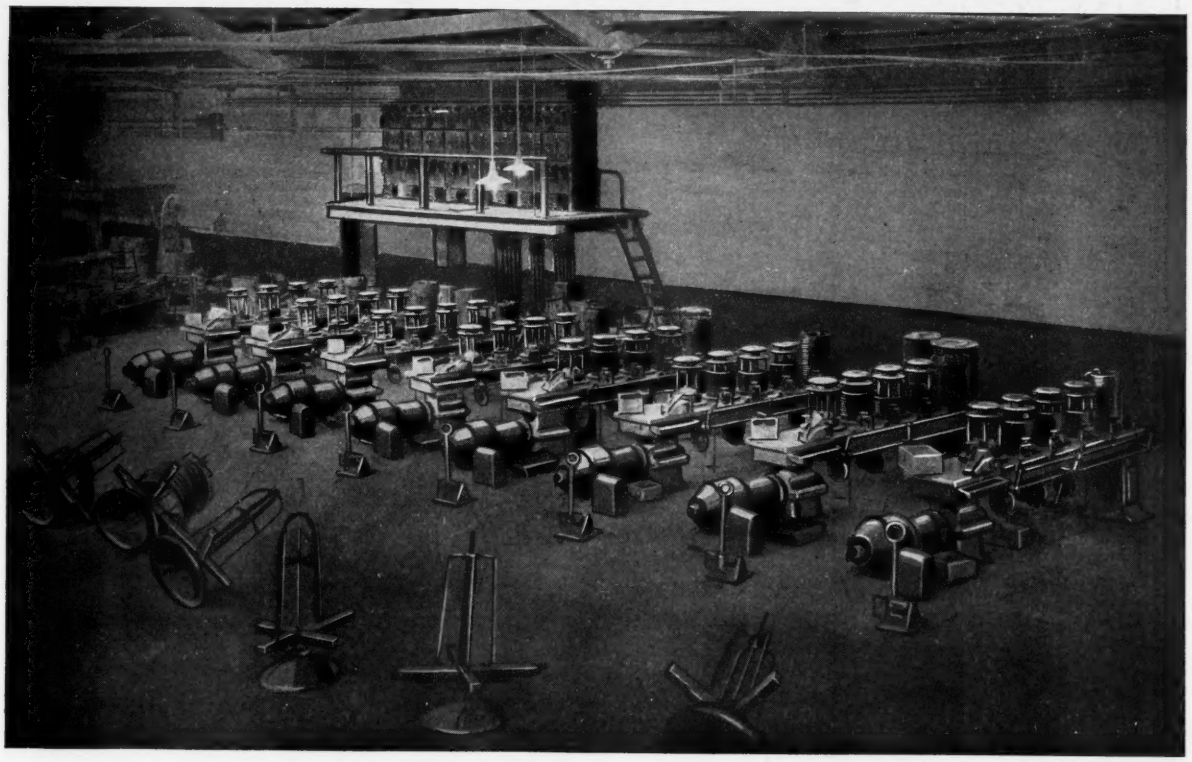
WIRE & WIRE PRODUCTS

OFFICIAL PUBLICATION OF THE WIRE ASSOCIATION



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April 1931

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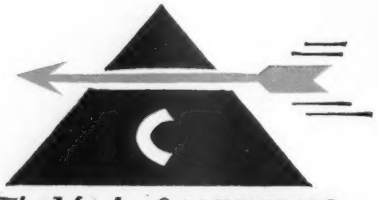

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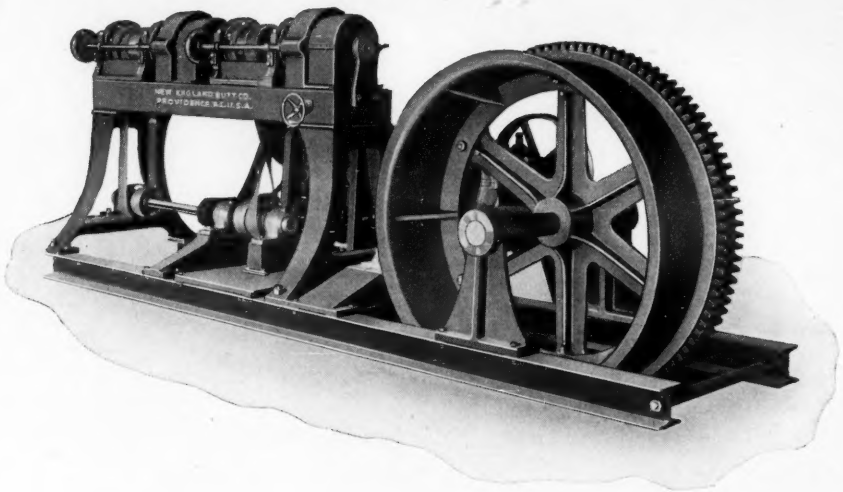

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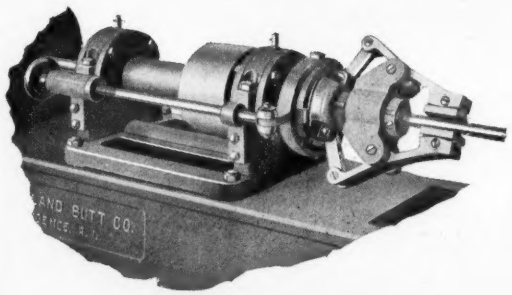

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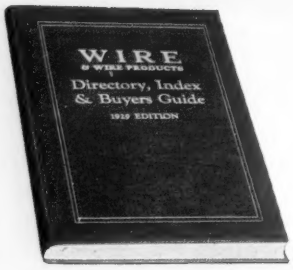

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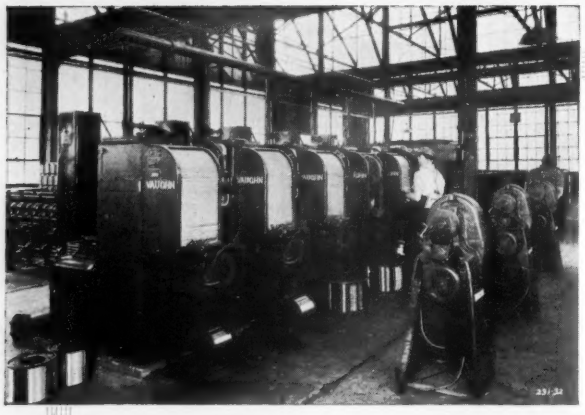

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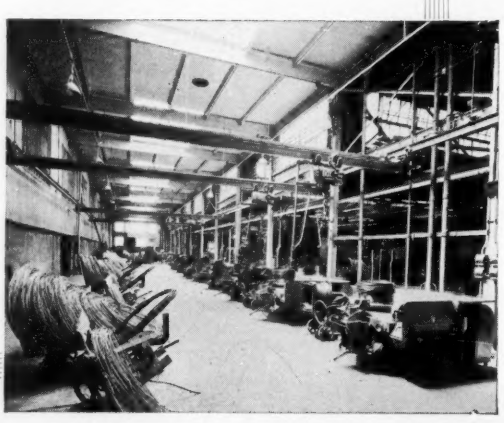
Double Deck Motoblocs drawing steel wire (Patented).



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WIRE & WIRE PRODUCTS

A monthly publication devoted to the production of Wire & Wire Products in all metals from the bar to the finished wire product.

Vol. 6 April 1931 No. 4

Official Publication of The Wire Association

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WIRE & WIRE PRODUCTS

A Monthly Publication Devoted to the Production of Wire and Wire Products in all Metals from the Bar to the Finished Wire Product.

Vol. 6 APRIL, 1931 No. 4

The Steel Industry's Use of Electricity

By G. E. Stoltz*

Recent Progress in Electrification of Major and Auxiliary Units—Accompanying Progress in Output and Reduced Manufacturing Costs

OUR most successful companies, in making plans to keep pace with the progress of this age, are directing their efforts along two lines; first, straight manufacturing on an up-to-date basis, and second, originating new and superior methods. Unless looking forward to new possibilities and trends it is possible for an old reliable concern to allow its machinery and methods to become antiquated.

In no industry has there been greater progress in recent years than in the steel industry; some of these major advances are due to the application of electricity to driving of auxiliaries, to annealing processes and to replacement of steam for main drive. Even more outstanding has been the installation of delicate and accurate control methods bringing complete changes in steel rolling methods.

Since the world war every industry has been subject to declining market prices. Industry's

*Manager, Industrial Engineering, Westinghouse Elec. & Mfg. Co. Abstract of paper presented before Western Metal Congress, San Francisco, Feb. 1931.

Fig. 1. Large Synchronous Electrical Motors Supplying the Power for a Modern Wire Rod Mill. Courtesy Westinghouse Electric & Mfg. Co.

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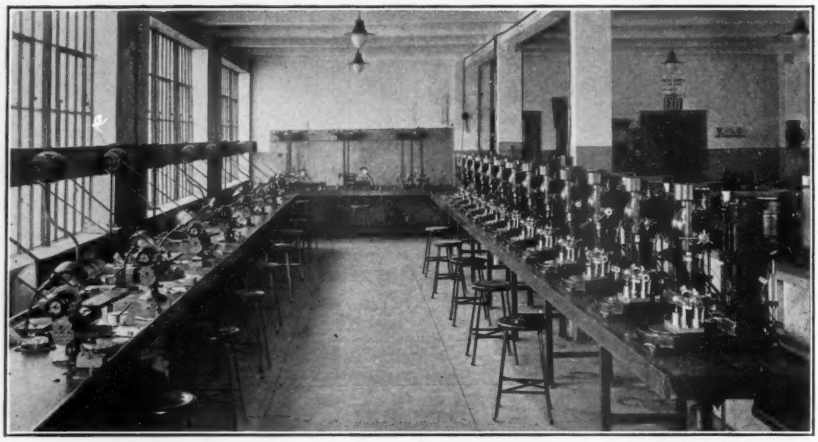

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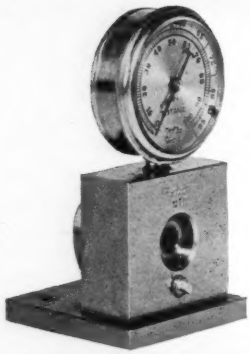

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problem has been to modify production methods and processes so as to permit manufacturing at a constantly declining cost. Unless this was or is being done margin of profit between cost and selling price will disappear. Too many looked on lower market prices as a temporary condition, and waited for a rise at a time when they should have established a program of studying methods and seeking substantial cost reductions.

Even governments and countries have had these difficult but definite problems closely associated with declining prices of commodities, as Brazil with coffee, Cuba with sugar, Canada and Argentine with wheat.

Basic Conditions Will Not Change Back

IT might be assumed that when commodity prices return to prewar levels we are in no worse condition that before but this is not true. It is not the purpose of industry to reduce wages to those prevailing before the war. Due to the fact that we have become accustomed to new advantages, new products, we can not be satisfied without these. This places a further responsibility on industry in that labor must produce much more material; otherwise these new devices can not be available to every one. Even when market prices settle to substantially-constant values cost reductions will have to continue. New luxuries or necessities will arise so that the problem of cost reduction while not so severe as now can never be dismissed.

New or more economical methods can be introduced by two means; one, increase unit output for a given investment, two, reduce labor cost per unit. The cost of an investment is usually 15%, including cost of raising money, obsolescence, taxes and insurance. An investment in labor-saving machinery totalling $6,667 can be made for an annual reduction in labor cost of $1,000. The most economic point is reached when all labor, replaceable with machinery at this rate (or less), has been displaced; there should be no such replacement where the cost of machinery exceeds some predetermined ratio of investment to about that applied to this industry.

The steel industry has been alert to these conditions. The composite price of their products has been subject to a gradual decline since 1922 with no artificial or abrupt changes. It has recognized this problem and tackled it in a responsive, efficient manner.

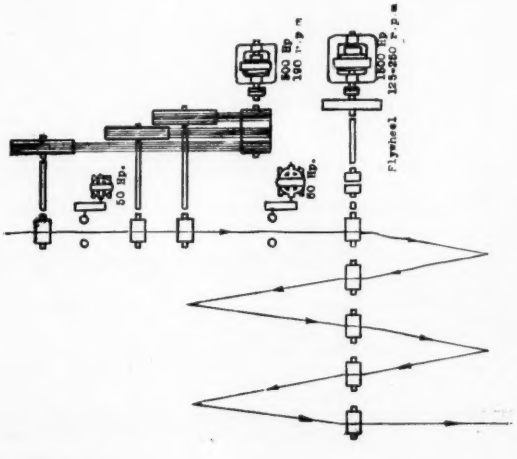
One of the most spectacular changes has been in wrought iron production. One company is now producing a method of pouring molten iron from one ladle into another containing molten slag. In 3 mins. a 6,000-lb. ingot is produced by a few men which would require 20 men for 2 hours under old methods. Puddling is a back-breaking job meant for young men only; today, the seasoned man of 50 with steady habits is better adapted to manipulate this new machinery. It would be difficult to imagine anyone wanting to revert to old wrought iron methods. This new one releases men to other industries and enables those remaining to extend their years of useful service with less effort.

Progress of Steel Electrification

UP to 1921 the industry had accepted electrification but not in the present wholehearted manner. It was established that auxiliaries should be driven by motors but many questioned their use for main roll drives. There was much argument between advocates of steam and electricity up to 1921. When the industry was confronted with a steady decline in prices many large engines were replaced by electric drive to effect greater economies. After the war many felt there would be a decline in electrical apparatus but it was not then recognized what an effective tool electrification was to become in reducing cost to meet economic conditions.

Ten years ago a report was prepared for companies considering a merger. An electrified plant was given credit then of $2.50 a ton over a steam-driven plant. This difference is now greater but this advantage alone, applied to normal output, would effect a saving of $125,000,000 a year. If all our

(*Please turn to page 152*)



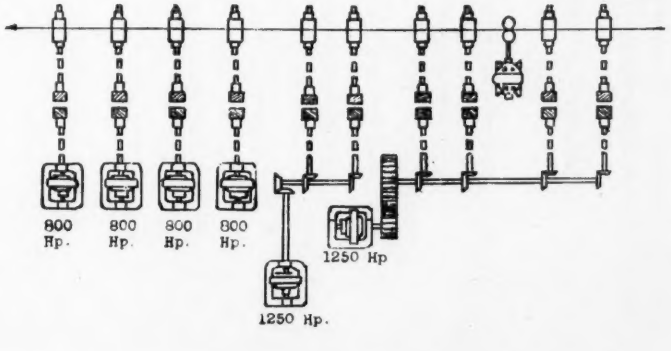


Fig. 2. At the Left, Layout of an Old Type 14-inch Strip Mill Showing Hand Transfer Before the Finished Stands. Fig. 3. At Right, Straight Line Layout of a Modern 14-inch Continuous Strip Mill. This Simplified Outfit Turns Out More Steel with Less Labor at Lower Cost.

Torsional Testing of Wire

By Dr. Alex. Glazvnov*
Translated by John H. Hruska**

A Contribution to Metallography Showing That the Number of Twists Depend on the Load, Which Should Be Standardized ▼ ▼ ▼ ▼ ▼

THERE are several principles governing contemporary methods of investigating the qualitative indices of various grades of wire. Mechanical testing of wires consists predominantly in the determination of tensile properties, bending resistance and torsional strength. From comparative studies of specifications for the mechanical testing of wires in many countries, considerable differences may be encountered, which unquestionably adds to the difficulties of inspection, manufacture an deven utilization of this type of material within various industries.

As to the tensile tests, there exists quite a similarity of specified procedures in most industrial countries; the negligible variations pertain especially to the selected length of test specimens, which in many instances is specified as a multiple of the diameter of the wire under investigation. Other specifications call for a certain standard "measured" length, given in inches or centimeters, without considering the diameter of the wire.

Bending tests differ mainly in the radii of the clamps or vises around which the tested wire is to be bent until fractured but these differences are comparatively small.

*Professor of Theoretical Metallurgy, State College of Metallurgy, Pribram, Czechoslovakia.
**Past President, Amer. Assn. Czechoslovak Engineers, Chicago.

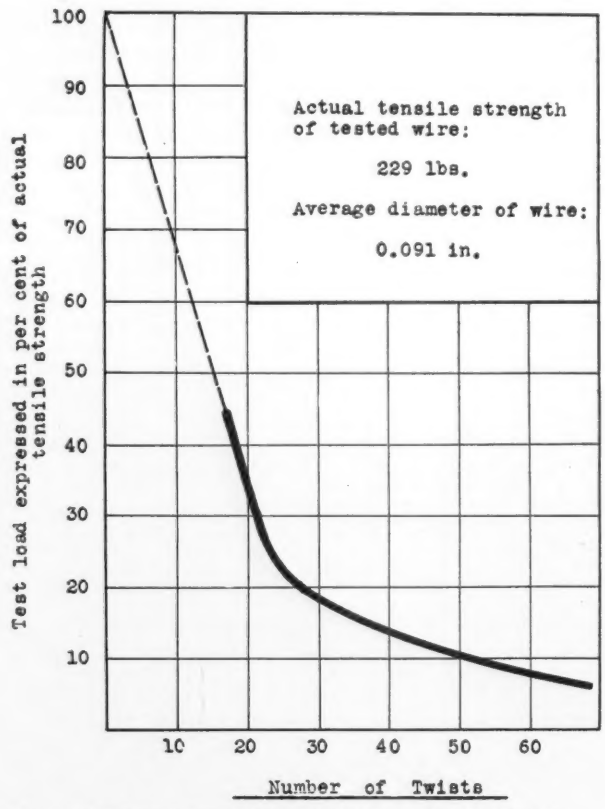


Fig. 1. Relationship between Number of Twists and Applied Load in the Torsional Testing of Copper Wire.

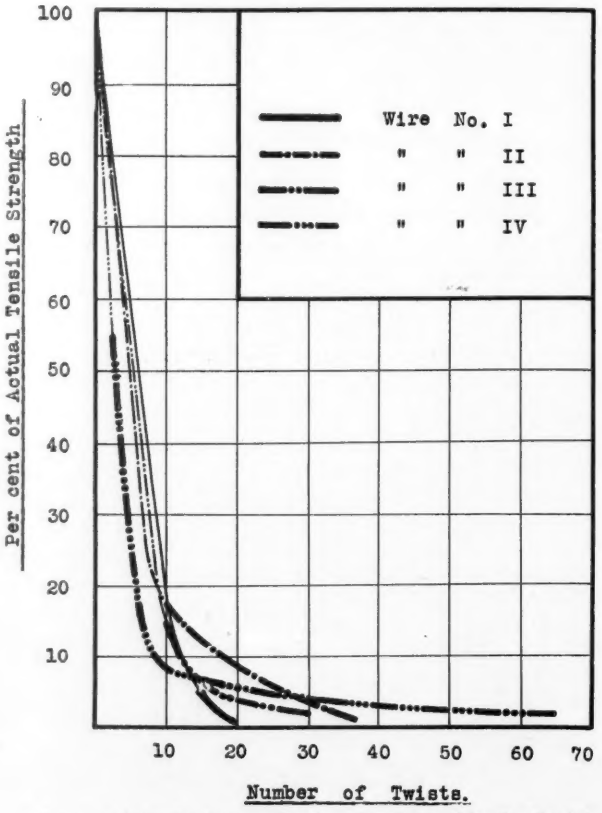


Fig. 5. Relationship between Number of Twists and Testing Load in the Torsional Testing of Steel Wire.

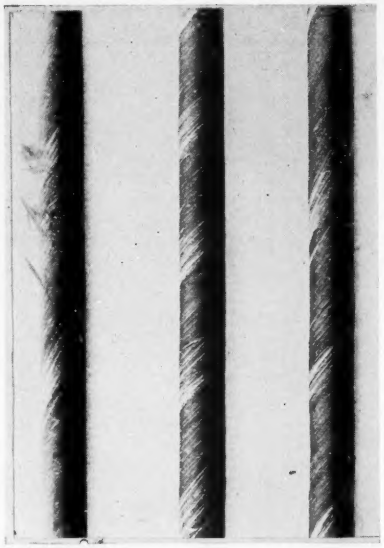


Fig. 2. Copper Wire After Twisting, Showing Uniform Distribution of Twists.

Greatest Variations In Torsion

WITHOUT doubt, the greatest variations of testing routine are experienced in the well-known torsional testing of wires —regardless of the significance of this phase of wire testing. The torsion or twisting test, giving not only information as to tensile properties but also indirectly indicating the behavior of the wire in bending, is often considered as a desirable criterion of the homogeneity of the metallographic characteristics of the wire.

It is interesting to note that many specifications eliminate torsional testing entirely; other manufacturers require only a smooth, "flat" fracture obtained by twisting wires in suitable torsion testing machines; still others specify only a uniform distribution of the twists at the moment of fracture. Hence the relative diversity in requirements before acceptance of wires by various consumers or manufacturers of wire products, based very often on personal opinions of a few executives.

From all investigations relating to the problem of torsional properties of ferrous and non-ferrous wire, it is obvious that the number of twists at the moment of fracture must necessarily depend upon the load under which torsion occurs. In order to clarify this question a large series of preliminary tests was conducted at the author's laboratories with very promising results for future investigative work. To enable a comparison between the obtained values, the testing loads throughout this paper are given in per cent of the actual tensional breaking load in lbs. or kg., under which a particular specimen of wire broke, when tested for tensile strength.

A wire made of pure copper, 7.90 in. (200 mm.) long, tested in accordance with the above mentioned principle, showed the following relationship:

Table 1.

% of Actual Breaking Load	Number of twists
5.5	69.0
10	58.0
15	41.0
20	28.0
30	22.5
38	20.0
45	18.0

The average diameter of the wire under investigation was 0.091 in. (2.3 mm.) and actual tensile breaking load 229 lbs. (104 kg.). The uniformity of the metal is well discernible from Fig. 2, showing three specimens after breaking.

The next series of tests was on steel wires of various carbon content and included four grades with corresponding variations in tensile strength and characteristics in bending. Length of all wires was 7.90 in. (200 mm).

Table 2.

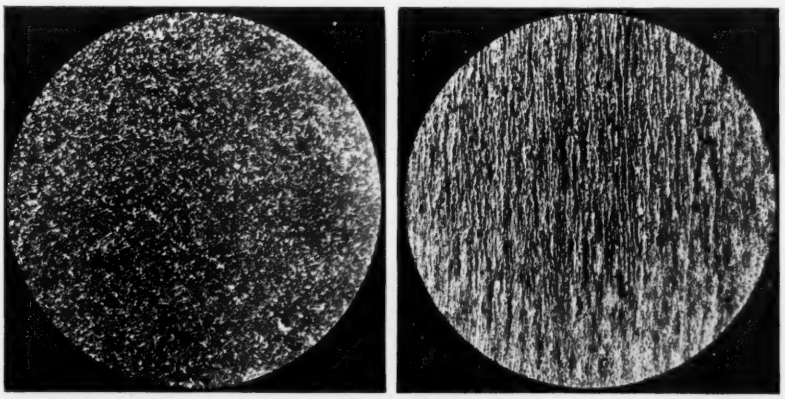
No. of Wire	% Carbon in Wire	Dia. of Wire In.	Tensile Strength		Number of Bends Before Fracture
			Actual Lbs.	Lbs./sq. in.	
I	0.82	0.091	2,050	316,000	9
II	0.39	0.071	750	190,000	25
III	0.84	0.071	1,025	262,000	19
IV	0.37	0.047	310	176,000	48

All wires for these and the following torsional tests disclosed upon microscopic examination a desirable sorbitic structure, thus revealing a proper thermal treatment prior to shipment. Photomicrographs 3 and 4, corresponding to transverse and a longtitudinal sections of a wire, prove the correctness of this. It may be seen from these micrographs, that the metal was practically free from solid non-metallic inclusions.

The results of torsion tests under specific loads made on a number of specimens representing each of the mentioned wires, are summarized in Table 3, graphically reproduced in Fig. 5.

From these values it is evident that the load under which torsion occurs is of utmost importance—especially in the case of wires with low tensile strength. For this reason any twisting or tor-

(*Please turn to page 150*)



Transverse Section Longitudinal Section
Microstructure of Steel Wire at 150 dia.
(Etched with 5% Nital).

Wire Questions and Answers

Question No. 12--Patents On Hazard Lay Set Rope ▼ ▼ ▼

The Wire Association:

Will you please inform whether the Hazard Lay Set Rope is patented and where or to whom we should write for information as to its construction and other details.

Answer Number 1

The Wire Association:

The Hazard Lay Set Rope is patented by the American Cable Co., in the United States and all foreign countries, and is manufactured under license by the Hazard Wire Rope Co., Wilkes Barre, Pa.

Question No. 7--Grinder For Die Reaming Tools ▼ ▼ ▼ ▼

Additional reference to the subject of grinders for die reaming tools on page 94 of the March issue.

The Wire Association:

If you will be kind enough to advise of the largest and the smallest wire diameter for which these tools are to be used (and preferably furnish a sample die and the tools as now used) we shall advise where you may obtain some standard machine adapted for this work. If above is not available, (i. e. the use of some standard machine) we would like to have consideration given to the possibility of having this office design such a machine (or any other special wire or rolling mill equipment) for your own private use.

Question No. 10 -- Dies For Making Galvanized Clothes Line ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼

Additional information to the above question which was given on page 95 of the March issue.

The Wire Association:

Regarding the stranding of galvanized clothes lines, some people used to use a lubricant but this has been done away with as unnecessary.

The largest manufacturer uses steel dies hardened and polished which in my estimation is the best. Others use cast iron.

The core needle is simply a tapered piece of steel the size of the displaced core wire, and made fast to the nose plate or head. No lubricant is used at the die.

Question No. 13--Drawing Fine Nickel Tubing ▼ ▼ ▼ ▼ ▼ ▼

The Wire Association:

We need information on drawing fine Nickel tubing, and any assistance you may be able to give us along these lines will be greatly appreciated. The material that we wish to draw is Pure Nickel about 1/16 in., inside diameter and .003-.005 in. wall thickness.

The Wire Association is for the specific purpose of improving production methods. It was organized as a clearing house of ideas on technical problems and research work in all phases of practical wire drawing and wire working.

The following inquiries were received from and answered by members of the Wire Association. These inquiries are sent to the Secretary of the Association who acts as a central clearing point, and neither the names of the firms or individuals sending in the inquiry, or of the men or firms replying are divulged without permission.

Join the Wire Association!

Answer Number 1

The Wire Association:

Nickel tubing is drawn on a mandrel through a die in a similar manner, but with different reductions, as steel tubing.

This company produces nickel tubing by this method only to 3/4 in. o. d. 20 Stubb's gage wall.

Answer Number 2

The Wire Association:

Our small gage tubing is produced in the same manner as larged sized tubing. The material is cold drawn on long drawing boards, using arbors.

There is to our knowledge no universally used standard method of determining temper for small sized tubing. In our plant when tubing is ordered "hard" by a customer, we draw it .0005 in. hard on the wall thickness and then contract the outside diameter .050 in. Thus if a customer wanted tubing .120 in. O. D. with a .0025 in. wall, the material would be drawn to .170 in. O. D. x .003 in. wall. It would then be annealed and drawn to .170 in. O. D. x .0025 in. wall. The last step would be reducing the outside diameter to .120 in.

In the case of tubing ordered very hard the stock would be drawn .002 in. hard on the wall and the outside diameter diminished .150 in. in a similar manner.

We produce tubing exactly to specified dimensions with outside diameters ranging from 1 in. to .025 in. and wall thicknesses of .070 in. down to as fine as .0015 in. Tubing drawn to small gages is often referred to as "hollow wire".

The pure nickel is sold by the foot, whereas nickel silver and Permanite by weight. Permanite is a nickel alloy used extensively by pencil manufacturers. It is white in color and takes a very high finish that will not readily tarnish. In addition, it is very durable.

Answer Number 3

The Wire Association:

The General Plate Company, Attleboro, Mass., makes a specialty of this work. It is our understanding that this company in drawing this fine tubing use a Mandrel through all sizes and operations. This of course, is only necessary where exactness of wall thicknesses are required. In other cases the tubing is drawn similar to wire. Throughout the drawing operation complete annealing is necessary after 25 to 35% reduction. Proper annealing equipment is essential and is covered in the booklet enclosed.

Answer Number 4

The Wire Association:

We manufacture pure nickel tubing as well as nickel alloys and various other metals. Our principal production is seamless steel tubing. We manufacture, quantities of brass, copper, aluminum and nickel silver, all of the seamless grade. Tubing is not drawn similar to wire but a tool must be used for the inside as well as the outside.

Answer Number 5

The Wire Association:

We do not manufacture pure nickel tube but make what is known as nickel silver in 20% mixture, in sizes as small as 1/16 in. o. d. .006 in. wall.

Answer Number 6

The Wire Association:

We draw pure nickel, also a 50% nickel, but not in large quantities. We produce 18% nickel silver in very large quantities. As a matter of fact throughout the United States we are, for small diameter sizes in light wall gages, practically the only source of supply able to make prompt deliveries and many concerns who sell nickel silver tube in such sizes and gages as producers, obtain their tubing from us. Seamless drawn tubing is not handled or produced in the same manner as wire.

Answer Number 7

The Wire Association:

We manufacture nickel silver tubing, some of the alloys containing as high as 25% nickel. Instead of using a core casting, we start with a flat sheet which is cupped in a powerful hydraulic press. After the cup is formed, it is drawn into a tube of the specified gauge and size, following the same procedure used in the manufacture of brass or copper tubes.

Our minimum diameter would be 3/8 in. but smaller sizes could be made in the same manner except that where the wall is thin the tubes are drawn over a continuous mandrel instead of over a plug.

Answer Number 8

The Wire Association:

We have been drawing this nickel tubing since last March with a production of 2,000-3,000 ft. per day. It is sold chiefly to the radio people for cathodes in making up radio bulbs. It runs from .060 with .001½ wall up to .123 with a .002½ wall, and lengths will vary from ½ in. to 15/16 in. with no

tolerance whatever on any of the sizes.

We buy the tubing from the International Nickel Company 5/8 x .035 in. wall and draw down to these small sizes. Our selling price on this fine tubing ranges from 20c to 30c per ft. and 25c per hundred pieces for cutting to length.

Answer Number 9

The Wire Association:

Our recently equipped tube mill is the result of a demand for a high quality nickel tubing, particularly in the radio field. Adequate facilities provide for the production of various dimensions of pure nickel tubing down to a wall thickness of .0015 in. and to a diameter as low as .050 in. The high degree of purity in composition is supplemented by the most exacting technique for uniformity in wall thickness and for the elimination for any surface or metallurgical defects.

Question No. 1---Wire Gages

Additional reference to the subject of wire gages as this was first published in the January and March issues from Mr. Webb.

The Wire Association:

There is not one wire gage in use today either in England or America that has "uniform reduction from size to size in proportion to the diameter of the wire". The Brown & Sharpe gage has this admirable feature, namely 10.94% reduction in diameter for each gage reduction. No. 0 to No. 1=.03556=10.94% of .32486 No. 0; No. 18 to No. 19=.004413=10.94% of .040303 No. 18; No. 25 to No. 26=.00196=10.94% of .1079 No. 25. Rawson gage No. 0 to No. 1=.024=7.3% of .324; No. 18 to No. 19=.006=13. plus % of .046, No. 25 to No. 26=.0015=6.7% of .02225.

It is better in my opinion to consider wire drawing from the view of reduction in area. Suppose it has been determined that the most desirable physical properties in wire could be obtained by drawing to a total reduction of area of 75% in five drafts from the heat-treated size. This reduction corresponds to six B&S gages sixes so one can lay out the drafting for any finished size by using the B&S gage, one size for the first and last drafts one and one quarter size for the second and fourth and one and one half size for the third draft. By using this method in every case no matter what the finished size, the reduction in area for every corresponding draft will be the same percent reduction in area. The same conditions obtain in using the Webb wire gage but with the Rawson gage using gage numbers it would very for each finished size. I suppose there are nearly twenty different gages for wire and sheets so that if it is a question of adopting one of the gages now in general use it seems most desirable to adopt the B&S gage with renewed emphasis upon ordering by decimals. This procedure will save us much confusion and annoyance. My thought in publishing the Webb wire gage was to gain simplicity and to assist other wire drawers in laying out drafting and to determine tensile strengths, etc.

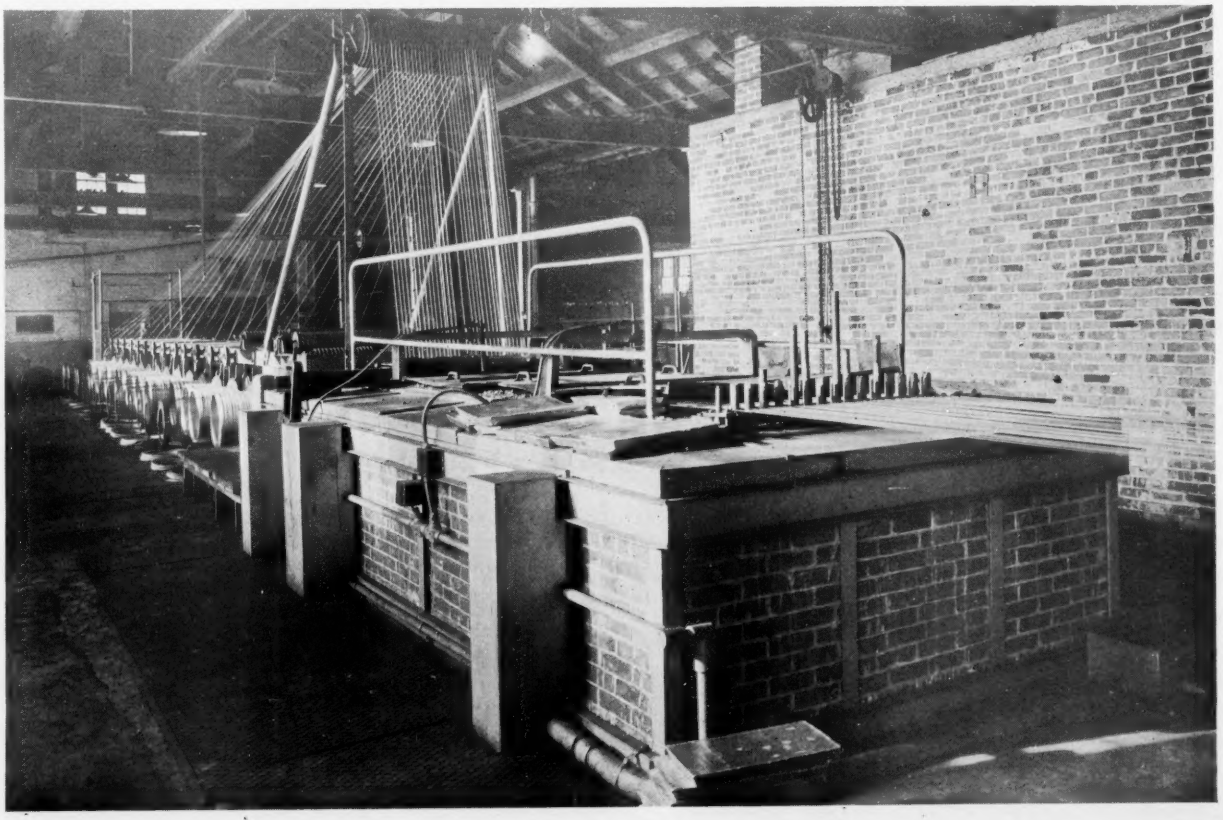
New Galvanizing Installation at Frost Steel and Wire Plant

IN the photograph below is shown a new type of deep galvanizing installation. The kettle which is heated electrically was installed by W. H. Spowers, Jr., Consulting Galvanizing Engineer, of No. 551 Fifth Avenue, New York City, for the Frost Steel & Wire Company of Hamilton, Ontario. This installation which has been in production since January 8th, this year, is indicative of the modern trend on deep installations in the wire field and includes the most advanced engineering technique in this field.

"We have found from this installation an improved quality of product, due to the closer temperature control and less dross disturbance", states Mr. R. W. Doering, Supt. of the Frost Company, "low operating cost is assured, and we expect considerable longer life of equipment".

Advanced technique in the proc-

(*Please turn to page 145*)



Mordica Accepts Wire Association Presidency

By Morris A. Hall

Widely-Known Bethlehem Wire Man to Head Organization for 1931-32--Granger of Wickwire-Spencer for Vice President --- Other Officers ▼▼▼▼▼▼▼▼▼▼

FOLLOWING necessary changes in the By-Laws at the meeting of the Wire Association held at the Hotel Pennsylvania, New York, Wednesday, Feb. 25, 1931 John Mordica, Superintendent of the Bethlehem Steel Co., Sparrows Point, Md., was chosen as Vice-President to serve until the regular annual meeting in Cleveland in June.

The meeting was a large and enthusiastic one, a partial list of

JOHN MORDICA
First President, Wire Ass'n.

those attending being given elsewhere. It was called to order by the Secretary who presented his report covering the interval from June, 1930 to date. He also presented a financial statement of the Association, The latter will not be reproduced here but it will be sufficient to say that as of Feb. 15, a total membership of 112 has resulted from the direct mail campaign and advertising in WIRE AND WIRE PRODUCTS. In the report this membership was classified as follows: Active company members 6, individual members 106. It was further divided into 97 in the United States, 9 in Canada and 6 in foreign countries. Another division as to occupations showed wire mill production men, vice presidents, works managers, superintendents and metallurgists 76, Individuals and companies manufacturing products for sale to the wire industry 32, and the United States Army Signal Corps 4.

The report of the Secretary as to the condition of the Association and the report of finances were both approved.

The report of the Acting Secretary was as follows:

This meeting is called for the purpose of submitting a resume of the activities of the Association during its organization period and to select governing committees and nominating committees to make their annual report at the meeting to be held at Cleveland, O., June 15 to 19, 1931.

The Wire Association was organized as a result of the meeting held at Buffalo, N. Y., June 1930, sponsored by WIRE AND WIRE PRODUCTS.

At this meeting there was an exhibit of wire drawing machinery, etc., at which the exhibitors were Sleeper & Hartley, Inc., Morgan Construction Co., Union Wire Die Co., R. B. Hayward Co., the Ironsides Co., the WIRE AND WIRE PRODUCTS.

At the meeting held in connection with the exhibition a vote was taken as to the desirability of forming an organization for the interchange of production ideas. As a result of this vote which was unanimously in favor of the idea, an organization committee was selected. This committee in turn designated Richard E. Brown of WIRE to go ahead with the active development work.

Literature was prepared and submitted to the various members of the organization committee and after approval mailed out to prospective members. A Constitution and By-Laws was prepared and each member of the committee was mailed a copy for criticism and corrections, and the present Constitution and By-Laws is a result of this work.

L. D. GRANGER
Vice President, Wire Ass'n.

Certain companies stated that in their opinion such a Constitution should be passed upon by competent legal authority and Rene A. Wormser, Attorney at Law, who was one of the organization attorneys for the Lead Ass'n. in the preparation of their Constitution and By-Laws was retained for this purpose.

The principal problem encountered was, and still is, how to secure

company supporting memberships.

The value of the Association to the individual is quite apparent as well as its value to the man who has something to sell wire mills.

The Association has handled 72 questions on technical research during the past 7½ months. Certain research work where no information is available will present some difficulties unless companies can be shown the value and necessity of taking out company memberships.

The number of technical inquiries handled during the short period of operation shows conclusively the need for this Association and should be a factor to influence the favorable decision of companies to support this movement.

The plans for the 1931 Annual Meeting and Exposition of the Wire Association are well under way.

At this date a large number of companies have taken space or advised that their orders will follow for space to display machinery and equipment so that the display will occupy more than three times as much room as last year.

We are also in correspondence with some 30 other companies considering exhibit space and the 1931 meeting promises to surpass in every way last year's meeting.

Arrangements have been made with the Hotel Cleveland to have the Association headquarters there in return for which the hotel will provide all the necessary meeting rooms, spaces for registration, stenographer for the registration booths, etc., without cost to the Association.

Referring to the membership obtained during the 7½ months organization period up to February 1st, a total of 88 members out of 112 had paid their annual dues.

The total revenue received was $1,420. The total cash disbursements in connection with the development of the Association were $1,566.70.

The cash disbursements did not include any expense for office space and incidental office expenses, telephone or telegraph charges, etc., as these were furnished by WIRE AND WIRE PRODUCTS without cost to the Association.

A separate statement of receipts and disbursements was submitted and is available for examination to the members.

The meeting elected Richard E. Brown, secretary of the Association, as chairman of the meeting and Mr. Brown pointed out that certain changes would be necessary in the By-Laws of the Association, before wire mill superintendents from the present membership could be eligible to hold the offices of president and vice-president.

On motion duly made and carried, the designated representatives of the active member companies under the present By-Laws, held a separate meeting as a committee of the whole, for the purpose of authorizing the necessary changes and electing the officers of the Association.

Under the present By-Laws these designated representatives constituted the total number of members who were qualified to make changes in the By-Laws and their action, being unanimious, operated to make such changes immediately effective.

After the changes were agreed upon the following officers of the Association were elected, subject to their acceptance of the office, to serve until the regular annual meeting to be held in Cleveland in June at which time their names will be presented to the association for confirmation and election for the regular terms of office.

President—John Mordica, Supt., Rod & Wire Mill, Bethlehem Steel Co., Sparrows Point, Md.

Vice-Pres.—L. D. Granger, Chief Metallurgist, Wickwire Spencer Steel Co., 41 East 42nd St., New York, N. Y.

Vice-Pres. — Herbert Horsfall, President and Managing Director of Canada Wire and Cable Co., Ltd., Toronto, Oontario, Canada.

Secretary-Treasurer — Richard E. Brown, President WIRE AND WIRE PRODUCTS, 551 Fifth Avenue, New York, N. Y.

The secretary was instructed to arrange with the Canadian membership for the formation of a Canadian section with a vice-president in charge and was also instructed to make arrangements for certain divisional chairmen, the names of whom were given him by secretary to publish the findings to the members of the Association through its official publication, and the business meeting adjourn-

(*Please turn to page 155*)

John Mordica, who has just accepted the presidency of the Wire Association, is a practical wire man.

In his boyhood he left Grammar school but attended night schools and when attendance there was not convenient kept up his studies along the lines of metallurgy from a wire standpoint in correspondence schools.

After serving his apprenticeship as a wire drawer he worked in several different plants in which widely different wire products were made with the idea of learning all about all kinds of wire. This combination of technical and practical wire knowledge brought him up to be superintendent of the Independent Steel & Wire Co., Kenova, W. Virginia until 1921. Then he accepted the position of general foreman of the Wire Mill with the Cambria Iron Co., Johnstown, Pa. This company was later taken over by the Bethlehem Steel Co. Mr. Mordica worked up to be Assistant Superintendent. In 1925 it was decided to build the plant at Sparrows Point, Md., and Mr. Mordica was selected as Superintendent of this. During the erection of the entire plant he acted in an advisory capacity to the Engineer in charge and with the opening of the plant, as operating Superintendent.

Few men are more widely known in the industry, and more especially in the wire and rod field, than "Jack" Mordica.

'Round the World With the Wire Industry

Further Reductions in European Wire Prices

CONTINENTAL wire prices have been reduced and are now as follows: wire nails, basis £ 5.10, bright wire £ 5.7.6 annealed wire £ 5.15.0, galvanized wire £ 6.15.0, varnished wire £ 6.10, barbed wire B.W.G. 12 £ 9.0. The demand for wire which was comparatively good in December, has fallen off heavily in January. The discount for wire netting off the British standard list is now only 88% f.o.b.

Early in January the Continental wire rod syndicate advanced the price for wire rods c. i. f. Yokohama to £ 6.12.6, but at end of the month in view of keener American competition the price was reduced to £ 6.10.0 per ton c. i. f.

The price for aluminum wire has been reduced to s 10½ per lb. f. o. b. Competition with Canadian sellers is keen. The consumption of aluminium wires in Germany shows a quick expansion.

Continental manufacturers of non-ferrous metal wire gauze are experiencing a considerable improvement in demand. Phosphor bronze wire gauze (18 mesh) is sold now at s 26/ per 100 sk. ft., 16 mesh brass gauze at s 23/ and 14 mesh copper gauze at s 22/6. The chief demand comes from mining districts in Canada, the Far East and South America.

The German wire rope cartel has succeeded in absorbing two more outsiders and now controls nearly 100% of the trade. So does the hexagonal wire netting syndicate, as all works in Germany are now members, but the wood screw cartel seems undergoing a crisis, as two makers have cancelled the cartel agreement.

Imports of American wire machinery into Germany totalled to £ 52.800 only last year, compared with £ 101.600 in 1929 and £ 136.-800 in 1928. Poland, Belgium, Italy and Denmark however advanced their purchases of American wire machinery. The majority of wire machinery purchased in America are wire drawing units of advanced designs, especially, continuous drawing machines.

Stage Anti-Waste Expositions British Cable Factories

The problem of reducing industrial waste is very much to the fore in these days of slow recovery from trade depression, and several firms are taking active steps to combat this element of loss. One of the most interesting methods employed is the idea of an Anti-Waste Exposition, to illustrate the principal, and often unsuspected, causes of waste. Such expositions are now being staged by Standard Telephones & Cables, Ltd., of London at its three factories and their scheme is of considerable interest.

The expositions consist of a series of illustrative show-cases of waste, including apparatus and supplies found in junk heaps and waste-paper baskets, broken fixtures and fittings damaged by carelessness, special tools and electrical instruments ruined through improper handling, supplies ordered in excess of requirements, wasted insulating material, and wasted stationery. Every exhibit is backed up by a card giving indications of the value of the loss incurred and how it could have been prevented, and all round the room where the exhibits are on show, amusing posters and cartoons are pinned up, each pointing a moral.

The expositions were organized by local committees at the three factories, each member handling a portion of the work and a definite time-table was arranged so that everybody in the organization visited the exposition in the firm's time. The firm found it paid to let the staff make a thorough examination of the exhibits, as many economy hints were picked up in the process. The exhibits were not aimed at individuals, but to draw attention to the directions in which waste was occurring. Valuable results are being obtained from a change in spirit in the organization.

Earliest Telegraph Wire Discovered in Britain

Interesting relics of the earliest experiments in electric telegraphy have recently been dug up in the grounds of Kelmscott House and presented to the Science Museum in London. The invention was made there in 1816 by Sir Francis Ronalds, the meteorologist, who abandoned his experiments with copper wire slung overhead by silk threads in favor of a copper cable 525 ft. long, which he buried 4 ft. deep in his garden and insulated by glass tubes. It is a portion of this, which Ronalds used for the conveying of charges of static electricity, that has been discovered and presented by Mrs. Morton Stephenson, who now occupies the house.

A fragment of the same copper wire, excavated in 1862 and already in possession of the Science Museum, still retains the wax joints of the glass and the pitch-lined wooden trough which originally secured it, but everything left in the ground except the wire and the glass now seems to have perished.

The inventor appears to have been discouraged from putting the invention into practical use by a rebuff from the British Admiralty, which assured him that after the Napoleonic Wars no telegraphs of any kind were needed, and that the semaphore telegraph was in any case efficient. His method at Kelmscott House, cumbrous in itself, was neverthless acknowledged over 20 years later by Wheatstone and Cooke, the inventors of the first public telegraph, to have been the first forerunner of their work.

British Gold and Silver Wire Drawers Revive Ancient Custom.

Following the hoary custom observed for several centuries, and revived by the present clerk, A. Charles Knight, the Master (Stanley Bell) and Wardens of the Worshipful Company of Gold and Silver Wyre Drawers recently at-

tended a special service at Dick Whittington's Church, St. Michael, Paternoster Royal, to ask the Divine blessing on their choice of a new Master. At the subsequent meeting of the Court Alderman Sir Harold Downer was elected Master, and Colonel Stephen Simpson, A. E. Watts, J. S. Holland (Master of the Loriners' Company), and J. E. Sendell were elected Wardens. Five prominent personages were also elected to the Freedom of the Livery.

Germans Find Difficulties in Nail Exports

The principal explanation for the difficulties of the South American wire nail industry is the circumstance that the nail factories, which had too heavy costs for tools and too much waste because they employed mostly unskilled workmen, gave orders to the European suppliers of nail wire to ship as soft a wire as possible in order to allow easier drawing and making of the nails, but of course the quality of such nails was anything but satisfactory. Buyers in Chile, Argentine, etc., were importing nails in spite of the high import duty and the production in Latin America had to be slowed down. Now a number of Continental wire exports have been engaged to supervise the production in South America and to restore the lost confidence in the national industry.

The March negotiations between the British and Continental industries will be started to establish uniform gages for wire export. At present five gages are in use and this leads to many misunderstandings. It is said that American representatives will attend the conference.

Wire-Drawing Research Conducted at Sheffield University

The department for the experimental cold-working of steels and other ferrous metals, which has now been in operation at Sheffield University for just over a year, is engaged on some exceedingly interesting researches. The matters selected for study include the drawing of wire of about 0.65 per cent carbon, the rolling of dead mild steel of the class used for deep drawing, and the drawing of mild steel rods about one inch in diameter. Special attention has been given to the resistance to fatigue of steel drawn under different conditions, and to the variations of hardness in drawing. Instruments have been devised and constructed for measuring the actual pressures during drawing and rolling, and work is now in hand to determine the amount of energy stored in the metal during processes of cold working.

The cold working of steel has been considerably developed in Sheffield, and those manufacturers who have equipped their works for this special class of trade have been rewarded by numerous orders which formerly would have been placed abroad. The industry has been greatly assisted by the university's research activities. Gifts of steel for research have been received from steel manufacturers in Sheffield and elsewhere, and the department has sisted by various manufacturers who have placed at the disposal of the department their facilities for rolling, annealing and grinding material.

COMING EVENTS

April 12-16—American Society of Mechanical Engineers. Joint national meeting, materials handling and management division, Cleveland, at the time of the industrial equipment exposition. Sec., Calvin W. Rice, 29 W. 39th St., New York.

May 7-8—Iron & Steel Inst. (Great Britain) Annual meeting at Inst. Civil Engs. Gt. George St. London, S. W. 1. Sec'y 28 Victoria St., London, S. W. 1.

May 18-23—Natl. Elec. Mfrs. Ass'n. Annual Spring meeting, at The Homestead, Hot Springs, Va.

June 8-12—54th Convention and Exhibition, Nat'l. Elec. Lt. Assn., Atlantic City, N. J.

June 15-19—Second Annual Wire Assn. Show and Convention, simultaneously with Iron & Steel Exposition, Public Auditorium, Cleveland, O. Richard E. Brown, Sec'y. Wire Assn., 551 Fifth Ave., New York.

June 22-26—American Society for Testing Materials—Annual meeting, The Stevens Hotel, Chicago. C. L. Warwick, Engineers' Club Bldg., 1315 Spruce St., Philadelphia, Pa.

Sept. 1932—Joint Meeting, Iron & Steel Inst. (Great Britain) and Amer. Inst. Mining & Matt. Engs. Technical sessions in New York. Visits to Bethlehem, Pa., and Pittsburgh, Pa., Washington, Youngstown, Detroit, Cleveland, Chicago, Niagara Falls, Hamilton, Toronto, Montreal, also to Lake Superior mining region, via. Duluth.

Foreign Trade Opportunities reported by Bureau of Foreign and Domestic Commerce during the month of March include inquiries for wire or wire products for the following sources: Bare copper wire (50162) Wellington, New Zealand; hardware especially bolts and small tools (50198) Quebec, Canada; ball and roller bearings (50215) Prague, Czechoslovakia; iron, steel and nonferrous scrap (50267) Berlin, Germany; needles (50319) Montreal, Canada; galvanized barbed wire (50345) Sao Paulo, Brazil; machine wire cloth (50295) London, England; plain and barbed galvanized wire (50319) Montevideo, Uruguay; copper wires (50345) Sao Paulo, Brazil; steel bars (50465) Tegucigalpa, Honduras; iron and steel (50410) Santo Domingo, Dominican Republic; machine needles (50420) Habana, Cuba; smooth and corrugated steel and reinforcing bars and iron for horseshoes (50388) Bogota, Colombia; soft manganese steel wire and cutting pliers and nippers (50480) Warrington, England; plain, barbed and telegraph wire (50388) Bogota, Colombia; electrolytic copper ingots and bars (50458) Havre, France; manila hemp (50482) Calais, France; Stainless steel (50495) Milan, Italy; steel staples for binding fruit and produce cases (50572) Viroflay, France; plain and barbed wire (50489) Fortalesa, Brazil; fourdrinier wires, (50675) Helsingfors, Finland; bobbin machinery for braiding of insulated wires and electric cords (50680) Berlin, Germany.

"High Speed Brass Rod," Scovill Mfg. Co., Waterbury, Conn. This small catalog emphasises the economy of buying good brass rod and describes this company's extruded product.

Outstanding Personalities of the Wire Industry

HERBERT A. MAY

HERBERT A. MAY has been appointed as assistant to F. A. Merrick, president of the Westinghouse Elec. & Mfg. Co. Mr. May will make his headquarters in the Grant Building, Pittsburgh, where the offices of the Westinghouse Central Sales District are located.

Mr. May is identified with a number of important local manufacturing concerns and banks. He is a director of the Union Drawn Steel Co.; the Mackintosh-Hemphill Co.; the Pittsburgh Steel Foundry Corp.; the Davidson Ore Mining Co., Buffalo, N. Y.; the Pittsburgh & W. R. R.; Forbes National Bank (Pittsburgh) and the Farmers' National Bank, Beaver Falls, Pa. He is also a director of the Pittsburgh Aviation Industries Corp.

John May, who has been manager of sales of the electrical and wire rope department of the New York office of the American Steel & Wire Co., has been appointed assistant general manager of sales under D. A. Merrican, vice-president and general manager of sales. Mr. May is to take charge of a new sales office which will be established on April 1 at the North Works, Worcester, Mass., to cover sales of wire specialities in New England. **F. Kenneth Sawyer,** of the Worcester office, and **Hugo D. Sharp,** of the Boston office, will be his assistants. Mr. May was graduated in electrical engineering from the University of Maine in 1905 and four years later joined the sales department of the American Steel & Wire Co.

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Harold B. Reid, formerly purchasing agent of the Wallace Barnes Co., Bristol, Conn., has been elected vice-president of the company and appointed general sales manager. **Harry C. Barnes,** treasurer of the company, has been appointed purchasing agent.

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J. N. Jones, superintendent of the blooming mill and rod mill of Gulf States Steel Co., Birmingham, Ala., has also been made superintendent of the company's new plate mill at the Alabama City, Ala., works. He has been with the company for 20 years.

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J. M. Hughes, superintendent of the Lowellville blast furance and steel plant, Sharon Steel Hoop Co., is named general superintendent succeeding W. B. Caldwell, resigned after 12 years' service. **E. E. Reagel,** assistant superintendent of the Sharon property, is named superintendent, succeeding G. W. Peffer, of Youngstown, resigned after 11 years with the company. **C. F. McBride** of the traffic department, is named traffic manager, replacing E. R. Griffith, who served the company 25 years.

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F. C. Engelhart, general manager and treasurer of the Kester Solder Co., Chicago, has been made president. **J. A. Reitzel,** formerly sales promotion manager, succeeds him as general sales manager.

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Carl W. Meyers, superintendent of the Carnegie Steel Co. bar mills at McDonald, resigned Feb. 1 to become superintendent of bar mills, Republic Steel Corp., at Chicago. Meyers went to the McDonald works 13 years ago when the plant was built. He was assistant superintendent for 6 years before being put in charge.

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R. L. Foster, general sales manager, Wickwire Spencer Steel Co., and its subsidiary, the American Wire Fabrics Corp., New York, has reorganized the general sales department of these companies and announces the following appointments: Wire and spring department, **A. G. Bussman,** manager, and **E. C. Stout,** assistant manager, with Mr. Stout in charge of spring sales; wire rope department, **R. H. Cherry,** manager; mechanical specialties department, **J. R. Worsford,** manager; hardware and structural products department, **W. C. Vaughn,** manager, and **A. A. Wilmot,** assistant manager.

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Personal Items for this page are solicited.

OBITUARIES

Charles Sanford Knight, Jr., 67, sales manager of electrical wire and wire rope, American Steel & Wire Co., Chicago, died March 11. A native of Worcester, Mass., he started work in 1878 at the plant of Washburn-Moen Mfg. Co., at 14 as a weigher and timekeeper. He later became foreman and was advanced to the sales department. He served as assistant manager at Dallas, Tex., and then sales representative in Worcester.

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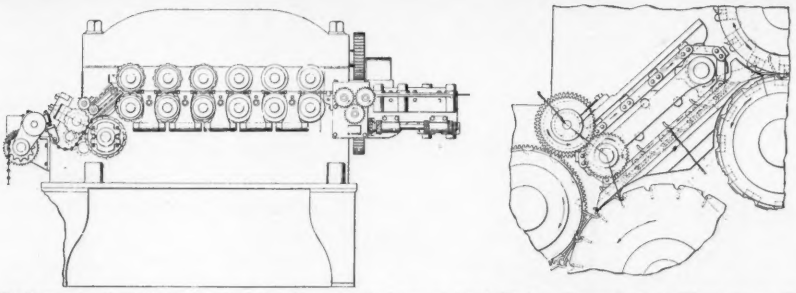
Charles F. Morgan, 54, assistant treasurer, comptroller and a director of Morgan Construction Co., Worcester, Mass., died March 3. Born in Manchester, Mass., he early located in Worcester. He was educated at Worcester Polytechnic Inst. and at Harvard. His father was associated with his brother, Charles H. Morgan, in the Morgan Spring Co., now the Morgan plant of Wickwire Spencer Steel Corp.

A Review of Recent Wire Patents



Barkstrom's (1,792,061) Machine for the manufacture of Steel Chain. General view (Sheet 1) at the Left, Detail of Gearing (Sheet 14) at the Right.

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No. 1,790,782. CONVEYOR BELT WITH REINFORCED EDGES. Patented Feb. 3, 1931, by Francis N. Woodman, Clinton Mass., assignor to Wickwire Spencer Steel Co., of New York, N. Y., a Corporation of Del. This invention relates to a belt formed of interlaced or interwoven wire members and designed for use in the transportation of material, etc., the inventor making use of integral raised portions or flanges along the two edges of the belt.

No. 1,791,106, METHOD AND MACHINE FOR STRIPPING LEAD FROM CABLES. Patented Feb. 3, 1931, by Clarence H. Slugg, Carteret, N. J., assignor to U. S. Metals Refining Co., Carteret, N. J., a Corporation of N. J. This machine is adapted for stripping cables cut into convenient lengths, of about seven feet, the inventor employing three gripping means, one being a vise which engages one end of the cable sheath, another is a pulling gripper, which separates the sheath when the two mentioned grippers are separated, and the third removes any portions of remaining sheath.

No. 1,791,402, ELECTRIC CABLE. Patented Feb. 3, 1931, by George Jackson Crowder, Dorchester, Mass., assignor to Simplex Wire & Cable Co., Boston, Mass., a Corporation of Mass. According to this patent, the inventor provides rubber insulation about the wire conductors of specific inductive capacity approaching that of air and low enough to limit that part of the total voltage stress taken across the adjacent air space to a value such that the formation of visual corona or other destructive changes or ozone is minimized.

No. 1,792,061, MACHINE FOR THE MANUFACTURE OF STEEL CHAIN. Patented Feb. 10, 1931, by Gustaf Barkstrom, deceased, late of Hinsdale, Ill., by Agnes Barkstrom, adminstratrix, Hinsdale, Ill., assignor, by Mesne Assigments, to Locke Steel Chain Co., Bridgeport, Conn., a Corporation of Conn. This invention is described as an improvement upon the several features of the apparatus disclosed in the pending application of Sylvanus D. Locke and Charles Parker, Serial No. 26,279, filed April 27, 1925, and has for one of its specific objects to provide an apparatus having more than five stations of link forming and assembling operations as therein shown, and also including working or forming elements or dies at each station which are modified over the prior structure.

No. 1,792,273, ELECTRICAL CONDUCTOR. Patented Feb. 10, 1931, by Alfred Byk, of Berlin-Charlottenberg, and Hans Jordan, Berlin-Karlshorst, Germany, assignors to General Electric Co., a Corporation of N. Y. The method in this patent includes, in the construction of a cable quad, twisting the four wires of the quad about a common axis, transposing one pair of wires so as to form n sections in the same unit of length, m and n representing relatively different, prime, odd integers.

No. 1,792,979, DETECTOR FOR INSULATED WIRE MACHINES. Patented Feb. 17, 1931, by John W. Greenleaf and Edward A. Mau, New Haven, Conn., assignors to Rockbestos Products Corp., New Haven, Conn., a Corporation of Del. It is an object of this invention to provide a circuit controlling device which will indicate a defect or failure in the application of an additional layer of insulating material to a conductor that has previously been supplied with one or more coverings or coatings.

No. 1,793,149, METHOD OF FORMING TIRE CHAINS. Patented Feb. 17, 1931, by Howard Wilcox, New York, N. Y., assignor to the Chain Products Co., Cleveland, O., a Corporation of O. The method of manipulating a long length of stock, ladder-form wire chain stored in a container, includes elevating the leading end thereof and securing the same to a superstructure to expose in depending position a stretch thereof, withdrawing a loop of the stock chain from the container without disturbing the attachment of its leading end to the superstructure, severing the loop at the proper point to form the desired length of tire chain, attaching fasteners to the depending end of the severed chain without disturbing its attachment to the superstructure, removing the completed tire chain, and elevating and securing the leading end of the ramoning stock chain to the superstructure.

Complete Descriptions and Drawings of Patents May Be Had for 25 cents. Address, Wire & Wire Products, 551 Fifth Avenue, New York.

No. 1,793,421, SPRING CONSTRUCTION. Patented Feb. 17, 1931, by Fred Burch, Milford, Mich. An object of the invention is to provide a spring structure for mattresses, cushions, etc., which is free from braces and the like.

No. 1,793,487, APPARATUS FOR MAKING ELECTRIC CABLES. Patented Feb. 24, 1931, by Gustave A. Johnson, Irvington, N. J. It is the principal object of the invention to provide a single apparatus which will twist, wrap, water-proof and armor a number of wire conductors making up an armored electric cable.

No. 1,793,724, SPRING ASSEMBLY. Patented Feb. 24, 1931, by Louis A. Suekoff, of Wilmette, Ill., assignor to Nachman Spring-Filled Corp., Chicago, Ill., a Corporation of Ill. The main object of this invention is to produce a spring assembly for upholstery, equipped with means for preventing the crowding together of the springs without interfering with the efficiency of the cushion containing the springs.

BRITISH ISSUE NEW ENGINEERING SPECIFICATIONS

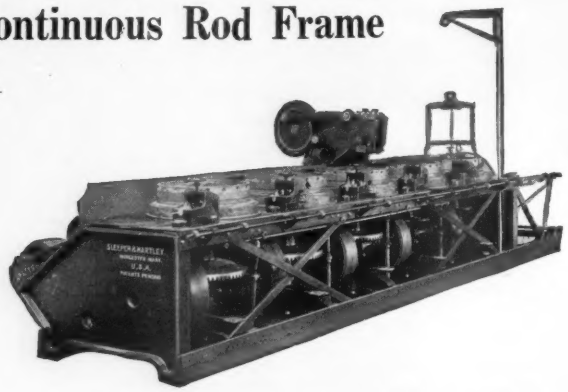
Five new standard specifications for non-ferrous metals have just been issued by the British Engineering Standards Association. One deals with hard-drawn phosphor-bronze wire, primarily for armature binding, two with tubes, bars and sections (excluding wire bars) of pure aluminum and two with gunmetal ingots and castings respectively.

A revision of the standard British specification for electric cable soldering sockets for cables from 0.003 to 1.00 sq. in. in sectional area, has also been issued recently by the Association. In this revision the design and dimensions of cast and tubular sockets have not been altered, but an important modification has been made in that hot-pressed sockets are now recognized as standard, the material for the manufacture of such sockets and also their dimensions being specified. Tables have been inserted giving the approximate current (at the Institution of Electrical Engineers' rating) of the largest conductor for which the different sizes of sockets are suitable, and a new appendix contains the international standards of resistance for copper.

Sleeper & Hartley
TRADE MARK
REG. U.S. PAT. OFF. & PRINCIPAL FOREIGN COUNTRIES

Delivery fr

Continuous Rod Frame



(Patented June 3, 1924—May 12, 1925—Others pending)

Capacity—No. 5 rods to No. 14—15 wire.

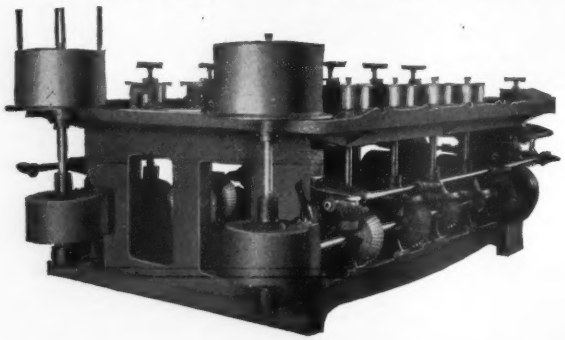
Automatic Compensation for Speed of Heads.

Ball or Roller Bearings used Throughout.

No Differential Gearing Whatever.

Made with 3, 4 or 5 Blocks as Desired.

Double 5-Draft Dry, Intermediate



Capacity—No. 14 to No. 23, high or low carbon wire.

Average Operator handles 3 to 4 blocks.

Daily Runs—No. 14-19 wire (4 hole), 1400 lbs. per Block.
No. 14-20 wire (5 hole), 1100 lbs. per Block.

More than 550 heads of this improved model in continual operation

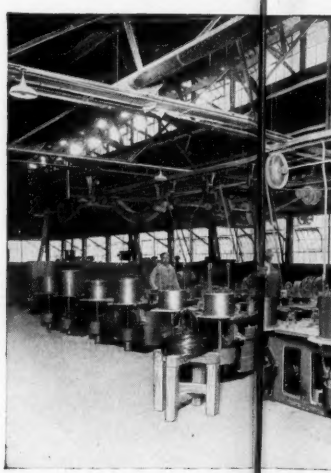
THE Wire Drawing Industry is, to[day] inte[rest]ing survey of our many friends in thi[s] import[ant] ies are being seen and orders heard a[fter] a ha[rd]

It was a tough winter. Many Si[ngle] Ho[ld] Machines stood idle, doing nothing m[ore] imp[ortant] mills.

This company, however, has not [been] idle business with the arrival of the blue[bird], has stock wire drawing machines.

May we suggest that you draw o[n] his st[ock] most approved types of machines for [your] mil[l]

You are cordially invited to visit [our] exhi[bit] Coiling machines, in operation, at the [Wire] Sh[ow] inclusive.



Battery of Double Six-D[raft] Dry
Drawing High Ca[rbon] Wire
The Thompson Wi[re] Co., W

Capacity—No. 16 to N[o.] 3, high [carbon]

Average Operator cares four blo[cks]

Daily Runs:—4000 lbs. [high] carbon
3000 lbs. [high] carbon

Direct driven with silent chain [and] gears [on] bearings. Variable [speed] for fi[ne]

American Agents

NEW YORK TERRITORY—Triplex Machine Tool Co.
PHILADELPHIA TERRITORY—Swind Machinery Co.
CHICAGO TERRITORY—Neff, Kohlbusch & Bissell, Inc.
SAN FRANCISCO—L. G. Henes Machine Tool Division of Jenison Machinery Co.
LOS ANGELES—L. G. Henes Machinery Co.

SLEEPER & HA

WORCESTER, MASS

from Stock

Sleeper & Hartley TRADE MARK

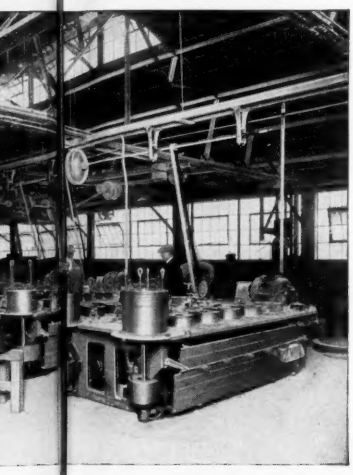
is, to intents, on the upgrade. A careful in this important business indicates that inquir- ard after a hard winter.

ny Single Hole and Continuous Wire Drawing ing more important than gather dust, in many

s not been idle and, anticipating the renewal of e bluelaw, has constructed an extensive line of

raw on his stock when ordering the best and es for our mill.

visitor exhibit of Wire Drawing and Spring at the Wire Show, Cleveland, O., June 15 to 19



ix-Dr Dry Continuous Machines
h Ca Wire in the Plant of
n Wi Co., Worcester, Mass.

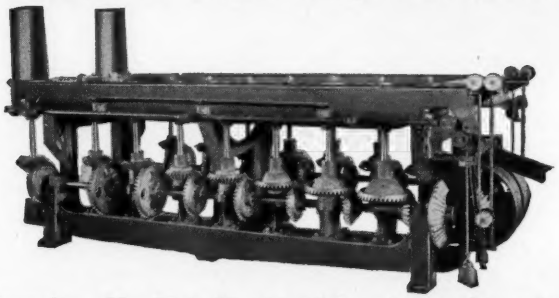
6 to N, high or low carbon wire.

cares four blocks (two machines).

00 lbs. carbon wire in 10 hours.
00 lbs. carbon wire in 10 hours.

nt chain gears throughout. Anti-friction Variable for finishing block.

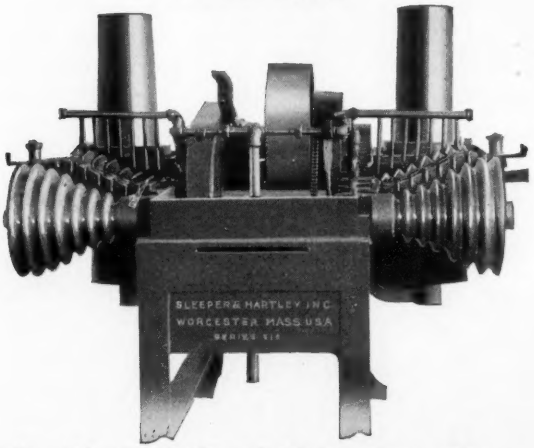
Double 8-Draft Wet, Fine Wire



Capacity—No. 22 to No. 36, high or low carbon wire.
Average Operator handles six blocks.
Daily Runs—No. 22-33 wire (8 holes) 660 lbs. of wire per 10-hour working day.

We have manufactured several thousand of these heads for Wire Mills throughout the country

Improved Double 8-Draft Wet, Cone Type



Capacity—No. 13 to No. 24, high or low carbon, or the finer woven screen wires.

Average Operator runs 6 to 12 machines, producing up to 1500 pounds of wire per day.

Machines staunchly built in six or eight drafts. Cones travel at 135 R. P. M., and draw 283 feet of wire per minute. Floor space —5′ 6″ by 4′ 6″.

HARTLEY, INC.

STER MASS., U. S. A.

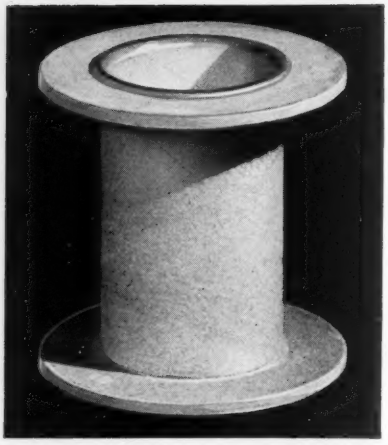
Foreign Agents

UNITED KINGDOM— Fredk. A. Perry, 63 Queen Victoria St., London, E. C. 4

MONTREAL AND TORONTO—Arthur Jackson Machine Tool Co.

AUSTRALIA AND NEW ZEALAND—Edwin Wood Pty. Ltd., Melbourne

JAPAN—Andrews & George Co., Tokyo



Low cost *non-returnable* wire and cable **reels**

AT last—a light wire and cable reel which means economy to you—which cuts your costs, and enables you to provide better service and more convenience for your customers—a non-returnable reel of fibre.

Not an experiment

We are now prepared to offer the reel which the Magnet Wire Division of the Wire Association has been seeking for years. It is not an experiment, for this type of reel has been manufactured in England for years, and is used almost exclusively there by 90% of all wire manufacturers. This reel is being manufactured under a special license protected by patent, and we are the exclusive licensee for both the United States and Canada.

Write for information

Write us for full specifications of this reel. We will be glad to furnish you with complete information regarding sizes now available, and will furnish samples to demonstrate our principle of construction. In asking for quotation, please submit sample, if possible, or let us have the following information: Quantity desired, overall dimension of the flanges, inside measurement between flanges, outside diameter of drum, diameter of bore, and gauge of wire to be wound on the drum.

Cut your costs with this reel!

SEFTON FIBRE CAN CO. NATIONAL

SEFTON
NATIONAL FIBRE CAN CO.
3285 Big Bend Boulevard
Maplewood, St. Louis, Mo.

Exports and Imports of Wire

Exports of iron and steel wire products in December, 1930 and January, 1931
(In gross tons)

Items	January 1931	December 1930	January 1930
Wire rods	3,248	3,013	3,481
Hoops, bands and strips	3,448	1,824	3,327
Plain wire	1,508	1,689	2,886
Barbed wire and woven wire fencing	2,767	1,842	2,433
Woven wire screen cloth	65	84	170
Wire rope	248	270	412
Insulated wire and cable	65	74	74
Other wire and manufactures	395	489	893
Wire nails	978	608	517
Nails other than wire	375	492	585
Tacks	37	43	43
Bolts, nuts, rivets, except track	505	693	1,122
Totals, these 12 classifications	13,639	11,054	15,913

Imports of iron and steel wire and wire products into the United States
(In gross tons)

Wire rods	584	684	944
Concrete reinforcement and other bars	7,302	7,230	2,299
Barbed wire	629	377	377
Round iron and steel wire	174	115	447
Steel telegraph and telephone wire	6	2	
Flat wire and strip steel	44	41	209
Wire rope and strand	156	180	207
Hoops and bands	1,559	1,777	708
Other wire	60	35	55
Nails, tacks and staples	584	479	595
Bolts, nuts, rivets and washers	141	37	26
Totals, these 11 classifications	11,239	10,956	5,957

EXPORTS of iron and steel products from the United States during January totaled 92,745 gross tons compared with 101,988 tons in December. Imports increased by 27 tons, to total 40,781 tons. The principal gain in the wire group was in hoops and bands, 1624 tons more exported than in December 1930 and barbed wire and woven wire fencing up 925 tons. Most of the other wire groups showed slight losses. In exports there was an increase of more than 300 tons in ingots, blooms and billet while bars also showed a good increase. Wire rod imports were down an even 100 tons and most of the other wire products showed small decreases except barbed wire, up 250 tons.

In the month of December Chile, Canada Salvador, Mexico, Cuba and British India were the big customers. British India took 59,052 pounds of woven wire fencing, the Philippine Islands took 32,619 pounds of woven wire screen cloth, and Canada took 325,885 pounds of wire n. e. s. and manufactures of wire. The fact that there are a good many horses in other countries calls for quite a little wire business, Colombia taking 59,400 pounds and Cuba 15,200 pounds of horse shoe nails and Chile 2,500 pounds of horseshoes. United Kingdom took the most plain iron and steel wire, while Argentina was our best customer for galvanized wire also for barbed wire and wire rope. Japan bought the most insulated iron and steel wire and cable while China took the greatest weight of wire nails.

"Copper Brazing & Copper-brazing Furnaces," General Elec. Co., Schenectady, N. Y. GEA publication No. 1291 gives a thorough description of what copper brazing is and how it applies to industry, then describes the furnaces available for doing such brazing.

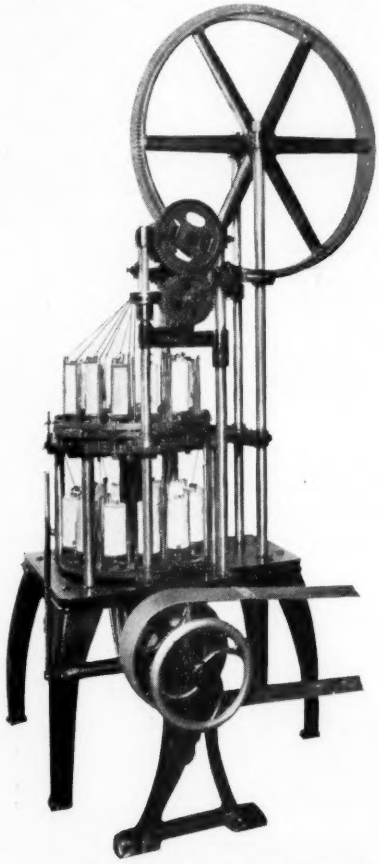
"Nickel Steel Data & Applications," International Nickel Co., New York, N. Y. A very ambitious and well-worth-while loose-leaf book that starts with the Society of Automotive Engineers' standard specifications for steels. All forms of high-strength steel using nickel are described.

New Wire Machinery

Description of Recently Developed New Tools of Interest to the Wire Industry

Interesting Development in Cable-Covering Braiders

During the last few months the Fidelity Machine Co., Philadelphia, Pa., has designed and developed a new type of cable-covering braider which is decidedly different in construction from older types. A close study of the accompanying illustration, showing a 24-carrier Fidelity cable braider of this type,



will reveal that the machine is not a double deck but a single deck braider so built that half of the yarn packages are placed above the other half. The lower bank of yarn packages is mounted on a rotating disc and yarns from these are led through thread guides which run in one raceway of the upper deck and in synchronism with the rotating disc.

To accomplish this the bottom plate is made in two sections, a center and an outer ring with a space between corresponding to the serpentine raceway in the top plate. The lower portions of the thread guides project through milled slots in the horn gears and run in the space noted above. The threads from the lower bank go straight through the hole in the thread guide to the top and then inter-braid with the threads from the upper bank of yarn packages.

In the other raceway of the upper deck is an equal number of carriers rotating in the opposite direction so that the result is to produce a standard braid of one covering. Since half of the yarn packages are placed in the upper deck and half in the lower deck, the upper yarn packages merely have to clear the thread guides fro mthe lower yarn packages and a small horn gear and large yarn package can be used, the No. 2 machine of this type taking a yarn package 4 in. in diameter and 8 in. traverse.

The advantages obtained with this type are decided decrease in the floor space required, increase in the size of the yarn package and large increase in production.

The large increase in production is made possible by the fact that the machine uses horn gears of small diameter and so the distance that a carrier has to travel in making a complete circuit of the machine is correspondingly small and the time required to make this circuit is equally small. Hence, production is increased. These machines have been made in sizes having 24, 32 and 48 carriers and running at speeds as high as 240 horn gear revolutions per minute.

Grasselli Inhibitor in Metal Pickling

This new inhibitor for use with pickling acids is especially recommended for use on wire and wire products. It is made by the Grasselli Chemical Co., Inc. Cleveland, O., suppliers for a great many

Steel reels

last longer

Constructed of corrosion resisting materials, three to four times the life of a wooden reel is a reasonable expectancy. The cost of a "Red Head" Reel is less than twice the cost of a wooden reel.

reduce freight

Appreciably lighter than wooden reels, "Red Head" Reels cost less to Ship— a cumulative saving that more than offsets increased first cost.

reduce investment

The longer life of "Red Head" Reels reduces the investment in reel equipment.

reduce repairs

Service records show that wooden reels require frequent repairs and rebuilding. With "Red Head" Reels such repairs have been radically reduced.

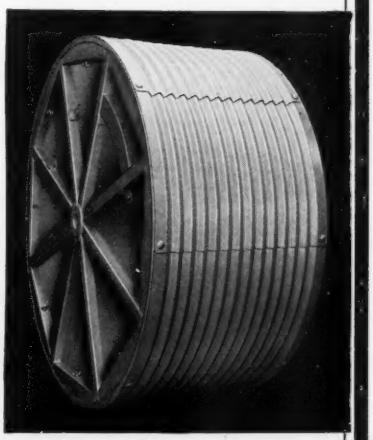
increase protection

Smooth inner surfaces: Much greater strength with the absence of all cutting or abrading projections—these protect not only the cable but the men handling it.

Copy of results of comparative tests will be furnished upon request.

"You are invited to see these reels at our exhibit at the Wire Show, Cleveland, Ohio, June 16-19".

"Red Head"



Manufactured and sold by

R. B. HAYWARD COMPANY

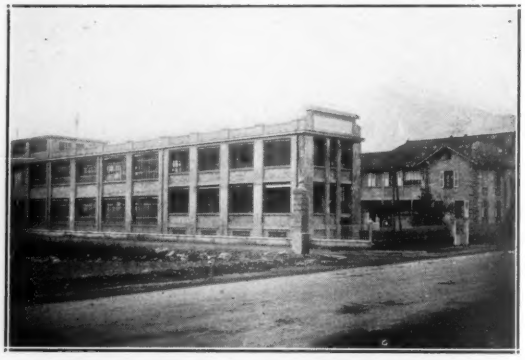
1714-1736 SheffieldAve.,Chicago and Graybar Bldg., New York

Under license arrangement with Electrical Research Products, Inc. Subsidiary of Western Electric Company, Incorporated.

BALLOFFET

1870 — 1931

The Quality Diamond Dies



Balloffet Diamond Wire Dies Co., Inc.

13-15 East 22nd St., New York City

PLANTS AT

New York Lagnieu (France) Cluses (France)

Trevoux (France)

VIANNEY

DIAMOND DIES

MADE IN FRANCE

100 FIFTH AVE · NEW YORK

years of acids for pickling to the larger iron and steel manufacturers.

Modern methods have increased the work of the pickling department and forced it to work faster. This acceleration demands more efficient pickle control through use of an inhibitor. This new inhibitor is a finely powdered brownish material, is used with sulphuric acid to prevent overpickling, pickle blisters and metal loss without slowing up the pickling.

It is available in two grades, No. 1, non-foaming, and No. 2, foaming. They have similar efficiency but No. 2 produces a foam blanket on the surface of the pickling solution which acts as a filter and condenser for any gas or vapors that might develop. They are to be used at the rate of ½ lb. for every 100 lbs. of concentrated sulphuric acid used in the pickling solution. The inhibitor can be added as the pickling bath is being made up and additions in proportional amounts can be made as pickling progresses. After short experience operators can readily determine the amounts best suited to their particular requirements and the work. These inhibitors are shipped in non-returnable sheet steel drums with friction top heads. No. 1 250 lbs. net, and No. 2 225 lbs. net. For the convenience of small users, small drums of the same style, but containing only 125 lbs. net can be had.

A Bench Gage for Filament and Fine Wires

This Bench Gage for Filament and Fine Wires is furnished by the B. C. Ames Company, Waltham, Mass., and is specially designed for measuring rapidly and accurately thin materials, wire, paper, celluloid, films and similar stock. The dial reads direct to .000025 in. and even closer measurements can be estimated.

Any size contact points can be furnished by the makers. The

jaws are opened by depressing the lower contact by means of the lever. Releasing the lever brings the lower contact up to a predetermined stop, which on material less than .002 in. thick gives a zero reading on the dial. On material of greater thickness, the zero reading is obtained by inserting a standard between the contact points, allowing the lower contact point to come against the stop, properly adjusted to bring the hand to zero on the dial.

The gauge is attractively finished in black crystalline, with all bright parts chromium plated.

Ruselite High Strength Metal for Wire

A new chromium-molybdenum-aluminum alloy has been developed by the Ruselite Corp., Milwaukee, Wisc., which possesses the distinct advantage of closely resembling chrome plate when polished. It is made by the corporation in ingot form only but is being produced in wire form by the Fansteel Products Co., N. Chicago. An ingot is drawn to wire rod size and this is then cold drawn to the finer sizes. In appearance it resembles aluminum. Ruselite is said to be stronger and has higher elongation than most alumium alloys. Die cast test bars show an average tensile strength of 30,000 lbs. per square inch with an elongation of 5-6% in 2 in.

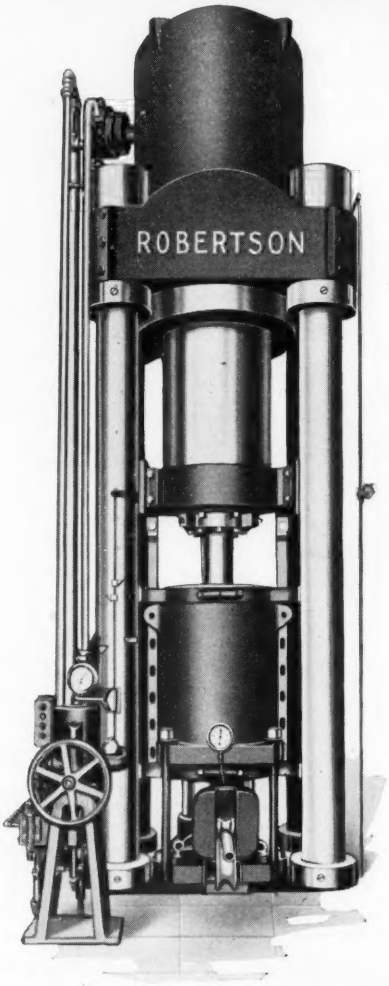
In sheet form, this material is in the duralumin class, having a tensile strength before heat treating of approximately 40,000 lbs. per square inch with an elongation between 1 and 2% in hard tempers. By annealing, this elongation can be increased to 20% and higher without reducing the tensile strength more than 1,000 lbs. This, in itself, is a very unusual property for an aluminum.

New Galvanizing Installation

(*Continued from page 138*)

ess of galvanizing is typified in this equipment and a very superior product from the standpoint of bonding of zinc to the wire is obtained and the zinc coat on this type of installation has remarkable bedding properties.

A Majority of the LEAD ENCASED CABLE manufacturers ---are using Robertson Presses

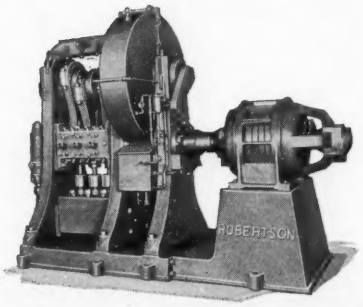


It is a significant fact, that our founder, John Robertson, was a Pioneer in the design and construction of a Press for the extrusion of lead pipe;—this was over 75 years ago.

Improvements in the design, construction and capacity of Robertson Presses have been made during the past 50 years in order to meet the increasing demands for lead encased electrical wires and cables—Today Robertson Lead Encasing Presses and Equipment are used by practically all of the lead encased cable manufacturers in the United States and Canada and by many manufacturers in Great Britain, Europe and Japan.

Robertson Lead Encasing Presses have a production capacity up to 6500 lbs. of lead (put on cable) per hour, — and will encase cable up to 5" outside diameter — another point. — "COMPLETE" Lead Cable Encasing Equipment may be obtained from Robertson; i. e., PRESS, Valves and Piping, Extrusion Cylinder and Ram. Die-Block, Lead Melting Pot and Furnace,—and Hydraulic Pressure Pump.

The Improved Robertson Triplex Hydraulic Pressure Pump illustrated to the right is the LAST WORD. Somewhat greater in first cost, these pumps cost less to operate and maintain. Ask for Literature.



John ROBERTSON CO. INC. Pioneers-Since 1858

123-131 Water Street Brooklyn, N.Y.

Ready! The New MICRO-WELD For Copper!

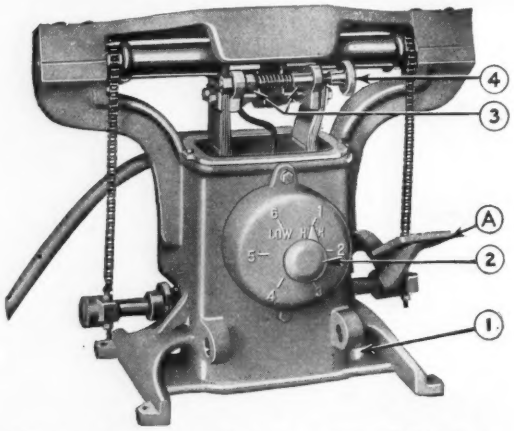
MICROMETER PRECISION — MICRO-WELD — TRADE MARK

This is the new model we've been promising for use on copper, aluminum, zinc and other metals that have always been difficult to weld.

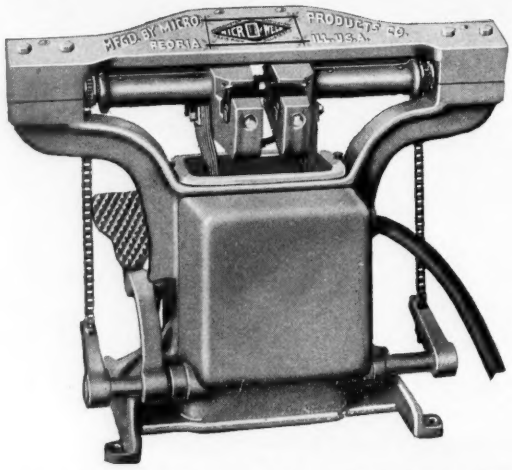
Typical of MICRO-WELD products, it involves principles of construction that have been long sought by designers of welding machines—and, like other MICRO-WELDERS, it is a precision machine with all operations designed for minimum dependence on the human element.

Actuation is accomplished by a single foot pedal, leaving the hands free to handle the materials.

By referring to the cut at the right, these details of construction will be located:



"You are cordially invited to see our exhibit in operation at the Wire Show, Cleveland, Ohio, June 15-19."



No. 1 is the Operating Switch. No. 2 is the Heat Switch. No. 3 is the Limit Switch and Limit Switch Adjustment. No. 4 is the Space Adjustment and A is the Foot Pedal Control.

Rods From 3-16" to 3-8" Are Welded with a minimum of annealing at the weld which is completed in a vacuum that eliminates the occlusion of oxides. Send for full details to

MICRO PRODUCTS COMPANY

140 Industrial Street, Dept. 431.
PEORIA, ILL., U. S. A.

European Office, H. A. Schlatter & Co.
Zurich, Limmatquai 32
Zurich 1, Limmatquai 32, Switzerland.

Mr. Spowers states that the installation of deep fired kettles with the heat application at determined positions on the sides is productive of great reductions in residuum losses general in this process besides lending to the product a uniformity in technique which is of great benefit to the serviceability of the product.

This installation was particularly designed to meet specifications calling for high quality products.

In old style practice where wire kettles are heated from the bottom or too low a postion on the sides a constant boiling of the dross is in effect. This situation is disastrous from the point of view of dross accumulation and denies the wire the opportunity of receiving a pure zinc coat. This situation is corrected in this very advanced type of equipment and results not only in low dross accumulation but in high quality product.

New Pictorial Presentation of Wire Industry

The Wire Association Convention at Cleveland will include a new feature. This, in the form of a changing picture, is a visual survey of the wire industry and gives even those familiar with it a new and more vivid realization of the tremendous development, progress and prosperity of this important field.

Members and visitors are urged to make a point of seeing this new way of telling a big story. It will give them new pride and satisfaction in the work in which they are engaged. Afterwards, field representatives will show this survey to other related industries that they may have a bigger and better understanding of our field.

In preparing this material it was found that we had not appreciated the magnitude of our own story until all facts were gathered, arranged in logical sequence and projected in illuminated views from photographs, charts, drawings and other ways of simplifying big facts and figures.

The Annual Meeting and Exhibition Of The Wire Association

WILL BE HELD

At the Auditorium, Cleveland, Ohio

June 15th to 19th, 1931 Inclusive

SPLENDID TECHNICAL SESSIONS AND DISCUSSIONS.

OPERATING EXHIBITS OF
WIRE DRAWING AND FORMING MACHINERY,
INSULATED WIRE AND CABLE MACHINERY,
DIES, REELS, LUBRICANTS, **WIRE** MILL EQUIPMENT, ETC.

Arrangements have been made to issue certificates for low rate railroad fares to all attending these meetings.

Association Headquarters will be at the Hotel Cleveland, which will be the Official Hotel. Make Your Reservations Early!

COME and MEET the PRODUCTION MEN of the INDUSTRY AT A REAL "GET TOGETHER AND GET ACQUAINTED" MEETING!

Why not Let the Wire Association Help You With Your Production Problems?

A membership entitles you to the following:

The assistance of other members of the Association in solving production questions.
Meetings with men engaged in problems similar to your own and the exchange of ideas with these men.
Participation in technical sessions and discussions at the annual meeting held at Cleveland, Ohio, June, 1931.
A subscription to WIRE & WIRE PRODUCTS—official publication of the organization.
A copy of the annual Buyers Guide and Year Book of the Wire Association.

The annual dues for membership are ten ($10.00) dollars.

Richard E. Brown, Secretary

THE WIRE ASSOCIATION

551-5th AVENUE **NEW YORK, N. Y.**

"Bell-Mine"
Rotary Kiln
PULVERIZED
LIME
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WIRE
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Excellent
Adhesiveness
Free from grit
and impurities

"Bell-Mine" Rotary Kiln Pulverized Lime is burned by gas flame in rotary kilns from stone that is deep mined from the famous Bellefonte High Calcium vein. Mechanical handling throughout insures against impurities. Constant analyses maintain the quality which makes "Bell-Mine" superior for wire drawing.

Quotations on request

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Reduced Domestic Prices for German Metal Products

In line with the general tendency toward price reduction in Germany, manufacturers of iron and steel made the decision Jan. 15, to lower domestic prices for principal products of the industry. These price reductions which average approximately 7% are retroactive and apply to all contracts made since Jan. 1, 1931.

Comparison of New and Old Prices.

The following table is of interest as showing new and old prices for rolling mill products:

Products:	Reichsmarks per ton Old price	New price
Merchant bars		
Freight basis Oberhausen	137	128
Freight basis Neunkirchen	131	122
Hoops and strips		
Northern Germany	159	148
Southern Germany	155	144
Wire rods		
Freight basis Oberhausen	167	158
Freight basis Neunkirchen	164	155

In addition to the above reductions in basic prices, according to Comm. James E. Wallis, Jr., Berlin, surcharges have also been very considerably cut, especially for merchant bars, wire rods and hoops and strips. In the case of merchant bars, surcharges for special shapes and qualities have been lowered by amounts ranging from 2.50 to 3.00 reichsmarks. Total price reductions for bars therefore range from 11.50 to 12.00 reichsmarks. Reductions in surcharges for various sizes of wire rods run from 0.50 reichsmark to 2.50 reichsmarks per ton. Total reductions in basic prices and surcharges for hoops and strips average 18 reichsmarks per ton.

The German Wire Assn. (Drahtverband) has reduced its prices by 1 reichsmark per 100 kilos or 10 reichsmarks per ton. This is 1 reichsmark per ton more than the reduction in wire rod prices. It may be noted at this time that on July 1, 1930, wire prices were reduced by 75 pfennigs per 100 kilos.

Although it had been hoped that the action on the part of the iron and steel industry in reducing prices would have a stimulating effect on the market, these expectations have not so far been fulfilled. Orders which have been placed thus far under the new price schedule are apparently only those necessary to cover current requirements, and to make up for purchases which had not been made earlier in anticipation of these reductions. Comparatively few long term contracts have been closed.

Big Wire Order for Railroad

Approximately 60,000,000 lbs. of copper will be required for completion of the Pennsylvania Railroad's electrification program, according to an estimate of the Copper & Brass Research Ass'n, of which 10,000,000 would be used for the railroad's 132 Kv single-phase transmission system, 2,500,000 lbs. for transformers and other conversion equipment, 24,500,000 lbs. in the distribution and contact system, and 23,000,000 lbs. for the electrical equipment of cars and locomotives. The distribution and contact system, the familiar catenary suspension of the overhead contact system, is copper throughout.

The work to be completed in the next 2½ years includes the changing of the New York terminal electrification from New York to Manhattan Transfer from d. c. to a. c.; the extension of the a. c. zone, first to New Brunswick and then to Trenton, the electrification to Wilmington being in service; then the main line through Baltimore to Washington and Potomac Yard; and other lines so that ultimately all passenger service east of Atglen (near Parkesburg on the Philadelphia Div.) and freight service east of Marietta (near Columbia, Pa.) will be handled electrically.

When this program is completed, the railroad will have 800 miles of electrified route, 2,750 miles of electrified track, and will include 85,000,000 lbs. of copper wire.

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that demonstate the performance of your product or installation, and prove its value for prospects' needs. Shown anywhere with a small, light, hand bag projector. Makes EVERY salesman equal to the BEST.

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Torsional Testing of Wire

(*Continued from page 131*)

sional test conducted with the aim of procuring numerical data as an indicator of quality, is practically valueless unless the exact load conditions are added to the reported

Table 3.

Number of Wire	% of Actual Tensile Strength	Number of Twists
I	0.3	20
I	2.0	17
I	5.5	15
II	1.0	37
II	4.0	30
II	17.5	10
III	2.0	30
III	2.5	27
III	3.0	25
III	6.0	17.5
III	15.0	10
IV	2.0	65
IV	3.5	48
IV	6.5	17.5
IV	8.0	10.0
IV	11.0	8.0
IV	16.0	5.5
IV	55.0	2.0

figures. This is true even if tensile or bending properties are known, because it is possible to obtain lower results from the torsional test merely by varying loads during the twisting of the specimens. Thus, the results of torsional testing, without certain standardization of procedure, depend entirely upon the applied technique of the testing engineer.

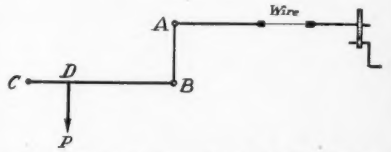
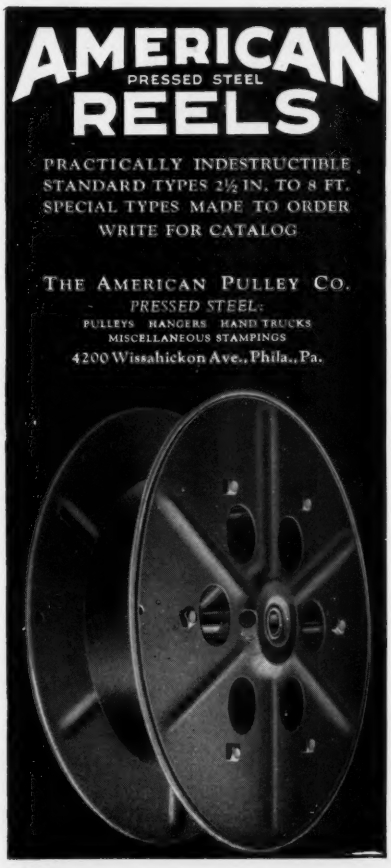


Fig. 6. Principle upon Which Modern Torsion Machine for Wire Testing Acts. ✦ ✦ ✦

A careful consideration of the diagram, Fig. 5, reveals the interesting fact that a pronounced difference in the number of twists exists only for comparatively small testing loads, i.e., for low percentages of actual tensile strength of the various grades of wire, whereas higher percentages (above 10% for instance) almost fail to differentiate between wires of varying composition or diameter. Thus, high percentages of testing load render the twisting or torsion test practically unsuitable



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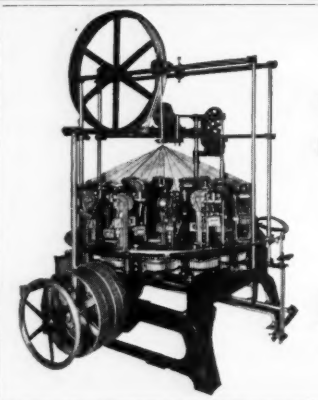

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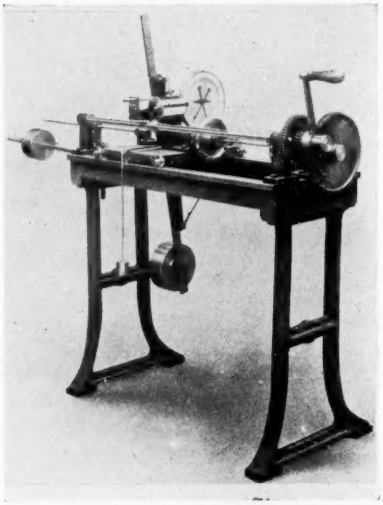
to serve as an index of physical characteristics or quality.

These and similar investigations prove conclusively that certain radical departures from laboratory routine of today would result in the improvement of methods of inspection by adhering to the following suggestions:

1. The twisting or torsion test shall be considered as important in the selection of wires for specific purposes.
2. An optional minimum of twists shall be adopted for particular grades of wires.
3. The load under which the number of twists is to be determined shall be expressed in % of the average of actual tensile strength for each grade of wire under examination.



4. The testing load for twisting or torsion shall be conventionally 1, 2 or 3% of the actual tensile strength of the wire.
5. The ruptured end of the tested specimens shall be smooth and the distribution of twists over the entire length of the sample shall be absolutely uniform.

For the convenience in testing, the following alterations should be embodied in the design and construction of torsional wire testing machinery (see Fig. 6):

a The distance A-B shall be exactly 100 mm. for machines

based on the metric system.

b The lever C-B shall be divided into mm. or fractions of inches in order to enable a quick change of the distance B-D.

c The equipment of each machine should include several accurate weights P, ranging from 1 to 5 kg. or 1 to 10 lbs.

d The measured length for torsional testing of wires should be a multiple of the wire diameter; for convenience 100 is suggested.

With these factors included in the commercial twisting machine there should be no reason why the torsional method of testing wires should not only equal but surpass the ordinary tensile test required by most manufacturers and users of wires. All mentioned tests were made on an Amsler testing machine of the type illustrated in Fig. 7.

The author desires to express his appreciation to his colleague, Professor F. Marik, for securing specifications pertaining to wire testing in all industrial countries of the world.

Bolt and Nut Prices Lower

With substantial orders for bolts and nuts being placed by American distributers and consumers with European makers, it is of interest that keen Continental competition is bringing declining prices. Total European exports of bolts, nuts and rivets last year are estimated to have declined more than 16 per cent. On recent transactions hexagonal bolts with nuts have been quoted at £7 21s. 6d. a ton ($1.68 a 100 lb.) for 1-in., £10 10s. a ton ($2.31 a 100 lb.) for ½-in., and £15 10s. a ton ($3.41 a 100 lb.) for ⅜-in. Carriage bolts and nuts with American round heads are quoted at £33 ($7.27 a 100 lb.) for ¼-in.; £24 a ton ($4.29 a 100 lb.) for 5/16-in., and £16 $3.52 a 100 lb.) for ⅜-in. Coach screws, ⅜-in. and ½-in. assorted are £18 a ton ($.97 a 100 lb.) All prices are based on packing in cases, kegs or double gunny sacks.

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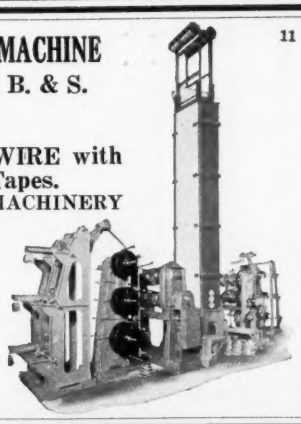
11

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Rod Frames—16" Frames
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Wire Pointers—Puller Tongs
General Castings for Wire Mill Use
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As wire drawers for over 30 years, your problems are ours. We have worked them out for ourselves and PREMIER dies made for your individual needs will work out your most difficult die job.

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HARRISON, NEW JERSEY
Chicago - Detroit - Morristown, N.J. - England - France
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Steel Industry's Use of Electricity

(*Continued from page 129*)

industries made such contributions a surplus would be available that would support all the new and recent industries without curtailment of business activity.

Electricity in mills has gone beyond replacing engines to economize. The design of mills has been revolutionized, in some instances, good equipment made obsolete. Those who have not followed the opportunities offered by electricity have had to face severe adverse financial conditions.

Electricity in Strip Mills

One of the first products to feel the far-reaching effects of electrification was strip. It was formerly rolled by passing the metal back and forth from one stand to another by hand. Drawbacks of this type of mill were that it required hard labor and the thin metal rapidly lost its temperature traveling along cold floors. The better method is the tandem mill with metal passing directly from one stand to another without labor and quickly brought to finished size without loss of temperature. The tandem mill reduced power required and enabled the slab to be finished to a thinner gage without reheating.

This newer mill was impossible with steam engines. It necessitates individual units driving each stand and adjustable in speed to

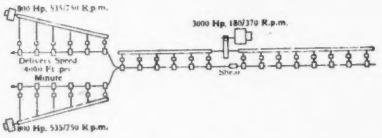

Fig. 4. Arrangement of a Modern Double-strand Wire Rod Mill.

accommodate different drafts; after this adjustment, the driving unit must maintain its speed whether load be light or heavy. This can be accomplished only by

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motor drive. The ability to obtain low speed for heavy material, high speed for light materials and a flat speed curve at any load radically changed methods of producing strip and made previous mills obsolete and uneconomical except for small jobbing orders. The question of power economy between motor and steam drive is now of minor importance.

Electricity in Sheet Mills

Strip covers a range from 3 to 20 in. in width while sheet varies from 30 to 60 in. These limits are not fixed but this is the general range. Since the continuous mill proved so successful on strip it was natural that the next step would be the production of heavy sheets. This followed and the present day production of them is being changed drastically. The same conclusive state as in strip has not been reached and only heavier sheets are being rolled in this type mill but limitations may be overcome. In the near future continuous rolling of sheet will be as complete as continuous production of strip.

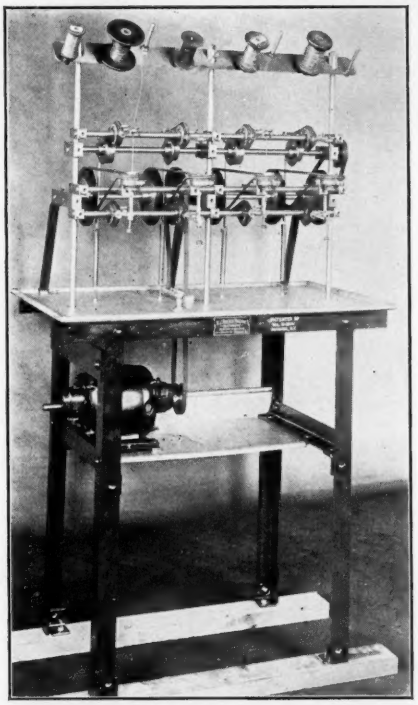
Electricity in Plate Mills

We are witnessing the installation of a continuous plate mill. Formerly sheared plate mills consisted of three-high mills where metal was passed back and forth. This old type was able to produce 10,000-15,000 tons a month. This new mill will turn out 50,000-75,000 tons. A few of this type could roll the country's whole requirements.

Electrification has been instrumental also in placing production in the hands of very large units. The best economy is obtained when rolling large orders. Larger corporations can do this by distributing orders over a large number of mills. Smaller organizations must roll a large number of small orders on the same mill. This is uneconomical, more so now that these large-tonnage mills are made possible.

For years the majority of structural material consisted of I beams and channels rolled in grooved rolls. Recently there have been installed new wide-flange mills incorporating new features but with important electrical problems to be solved before maximum output is obtainable.

The Haddow Die Re-Cutting and Polishing Machine will lower your die re-cutting cost to a fraction of present costs



Recuts dies about ten times faster than by the needle and dust methods and with less diamond dust.

Any unskilled operator can learn to handle it quickly and efficiently.

ONE MONTH'S SHOP PRODUCTION

Total number of dies cut —1047

Total number of hours required—182.5

Average number of dies per hour—5.73

Number of operators—1

With only one man—This machine will do the work now requiring four to six men in less time and at lower cost.

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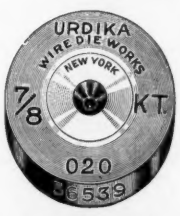

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Electricity in Wire and Rod Mills

Similarly to the strip mill, rods were formerly rolled in mills where the metal was looped back and forth by hand from one stand to another. In fact there are still quite a few mills using this process or modifications of it. It's limitations were the same, namely, that it required a great deal of hand labor, limited the rolling speeds and entailed a large heat loss in the rolled material.

The first important change was the use of a continuous mill. On these drives the accepted practice has been towards the single motor drive with each mill stand geared to a common line shaft. Delivery speeds have risen steadily until speeds of 4,000 r.p.m. are not uncommon. Later mills have nearly all made use of synchronous motors. With its constant speed, high power factor, rugged construction, and in modern designs high starting torque, the synchronous motor has proven an exceedingly reliable prime mover for this type of mill.

While progress has not been so rapid towards the use of individual stands there are indications that this will be the future trend. Mills are now in operation rolling two strands through a single motor-driven roughing mill. Such a mill layout is shown. It will be noted that each strand is finished in a separately-driven finishing mill.

With the use of modern speed regulating equipment there seems to be no real obstacle to the use of individually driven stands. We may expect the rod mill of the future to show increased economies from such a change. Small high speed motors, absence of gearing and flexibility of control will all contribute towards this end.

Future Prospects for Electricity

There are other instances where steel companies have used electrification to maintain prosperous conditions regardless of decline in prices. The steel industry has not taken this as a mere incident but as a very definite means of remolding manufacturing so capital may be guaranteed a fair return and labor enjoy its accustomed comforts and living conditions.

There is no doubt that further changes of great consequence will be obtained through use of electricity. We have little appreciation of the uses, to which it may be put in the future but these possibilities will be unfolded as in the past. Those companies alert and diligently searching for new possibilities will be successful; other will fall behind. It is difficult to foresee these new needs of industry, these changed economic conditions, and the possibilities to be made available, nevertheless they are of the greatest importance and those who interpret them properly are assured maximum success for their efforts.

Mordica Accepts Presidency

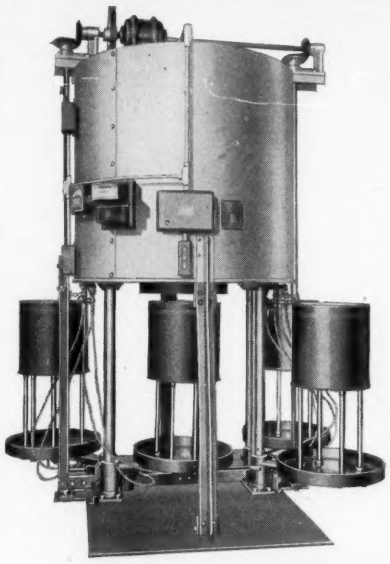
(*Continued from page 135*)

ed. Immediately following there was a very pleasant get-together luncheon and some further informal discussion with suggestions towards the betterment of the affairs of the Association.

The committee that is working on the standardization of spools and reels used in the wire industry consisting of: E. W. Clark, General Electric Corp., Rome N. Y.; Paul M. Mueller, General Cable Corp., Rome N. Y.; R. E. Bassett, American Brass Co., Waterbury, Conn.; E. F. Gould, Anaconda Wire & Cable Co., Hastings-on-Hudson, N. Y., met simultaneously with the Wire Association at its invitation.

The changes voted in the By-Laws adopted Sept. 30, 1930, relate to voting rights and qualifications to hold office to the various classes of members. Under existing By-Laws only designated representatives of companies paying $100 a year dues, could serve on the board of directors, and vote on changes and amendments to the Constitution and By-Laws.

This was changed so that every member of the Association, irrespective of class of membership, can vote on all subjects, serve on all committees, and exercise full membership rights of every kind. The only exception is that in order to serve as president, or vice-president, it is necessary to be a wire mill production man.



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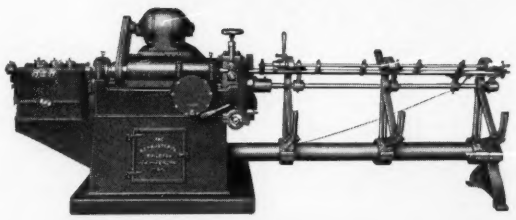
CHECK FOR ACCURACY, AND ECONOMY, AND YOUR CHOICE OF WIRE STRAIGHTENING AND CUTTING MACHINES WILL BE

SHUSTER

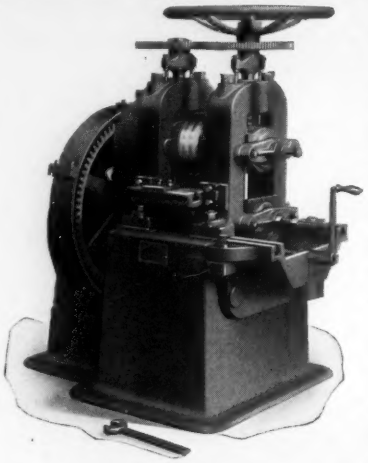


feeds coil after coil of wire, and its rugged construction insures long life under the hardest kind of service.

Steel Fliers, Timken Roller Bearings, Texrope Drives, Etc.

The F. B. Shuster Company New Haven, Conn.

Straightener Specialists Since 1866



Rolling mill for the production of grooved trolley wire from round rod at much faster speeds than are possible by drawing.

Multiple grooved rolls, which are easily changed by withdrawal of outer housing to a swinging bracket, by hand operated screw.

Also used for making sector shaped electrical conductors. Complete with necessary guides.

Machinery for the Manufacture of Sheets, Strips; Tubes, Rod, Wire and Cable.

SPECIAL MACHINERY

The Torrington Mfg. Co.
Torrington - Conn, U.S.A.
44 Franklin St.

NEW YORK'S NEWEST

NEW! MODERN! LUXURIOUS!

1000 Rooms—1000 Baths

Each room with both private bath and shower, CIRCULATING ice water, servidor

RADIO IN EVERY ROOM

$3 DAILY

SINGLE	$3.00	$3.50	$4
DOUBLE	$4.50	$5.00	$6

In the theatre, shops and business centers

SIDNEY J. MITCHELL, Manager Telephone Circle 8500

NEW HOTEL
VICTORIA

7th Avenue at 51st Street, New York

A further change is that where there are two or more members of the Association in the employ of the same company, they must designate one man with one vote for their group.

The effect of these changes in the By-Laws is to take out of the hands of the designated representatives of company members contributing $100, the control of changes in the Constitution and By-Laws and to place this control in the hands of the general membership of the Association, irrespective of class of membership.

Under date of March 5, Mr. Mordica accepted the presidency and subsequently acceptances were received from the others.

Among those present at the meeting at the Hotel Pennsylvania, on Feb. 25, were:

H. D. Davenport, Mgr., Washburn Wire Co., New York, N. Y.

K. R. Beardslee, Carboloy Company, Inc., Newark, N. J.

Nils K. G. Tholand, Ekstrand & Tholand, New York, N. Y.

Sidney A. Ochs, Bloomfield, N. J.

J. M. Wakefield, R. B. Hayward Co., New York N. Y.

Alexander Milne, Metallurgist, Jones & Laughlin Steel Co., Pittsburgh, Pa.

Robert W. Withington, Pres., American Insulating Machinery Co., Philadelphia Pa.

W. H. Spowers, Jr., Consulting Galvanizing Engineer, New York, N. Y.

L. A. Vaughn, Pres., Vaughn Machinery Co., Cuyahoga Falls, Ohio.

Charles S. Barningham, Sales Mgr., New England Butt Co., Providence, R. I.

C. R. Weidenmiller, Washburn Wire Co., New York, N. Y.

R. L. Hamaker, American Lime & Stone Co., New York, N. Y.

G. D. Hartley, General Manager, Sleeper & Hartley, Inc., Worcester, Mass.

Kenneth B. Lewis, Manager, Wire Mills Sales, Morgan Construction Co., Worcester, Mass.

Morris A. Hall, Editor, "Wire and Wire Products," New York, N. Y.

Miss H. M. Addor, Addor Wire Die Co., New York, N. Y.

BUYERS' GUIDE

For more complete information, consult the annual Directory, Index & Buyers' Guide.

ANNEALING FURNACES
Charles F. Kenworthy, Inc., Waterbury, Conn.

ANNEALING POTS
Columbiana Boiler Co., Columbiana, O.
Scudder, E. J., Fdry & Machine Co., Trenton, N. J.

ARMORING EQUIPMENT
Amer. Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
John Robertson Co., Brooklyn, N. Y.
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.
Watson Machine Co., Paterson, N. J.

BAKERS
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

BRAIDER CARRIERS
Mossberg Pressed Steel Co., Attleboro, Mass.

CASTINGS—Wire Mill
E. J. Scudder Foundry & Machine Co., Trenton, N. J.

CLEANING & PICKLING EQUIPMENT
Vaughn Machinery Co., Cuyahoga Falls, O.

CRANES—Wire Mill
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

DIES—Chilled Iron
Waterbury Wire Die Co., Waterbury, Ct.

DIES—Diamond
Addor Wire Die Works, N. Y.
Balloffet Diamond Wire Dies Co., Inc., N. Y. C.
Bellet Diamond Die Works, N. Y.
Cochaud Wire Die Co., New York.
Driver-Harris Co., Harrison, N. J.
Globe Diamond Die Corp., New York.
Koebel Wagner Diamond Corp., New York, N. Y.
F. Krause & Co., Inc., Jersey City, N. J.
Master Wire Die Corp., New York, N. Y.
Union Wire Die Corp., New York, N. Y.
Urdika Wire Die Co., N. Y. C.
Vianney Wire Die Works, New York.
Waterbury Wire Die Co., Waterbury, Ct.

DIES—Composition
Addor Wire Die Works, N. Y.
Bellet Diamond Die Works, N. Y.
Urdika Wire Die Works, Inc., New York

DIES—Lead Extrusion
John Robertson Co., Brooklyn, N. Y.

DIES—Repairs & Re-Cutting
Addor Wire Die Works, N. Y.
Balloffet Diamond Wire Dies Co., Inc., N. Y. C.
Bellet Diamond Die Works, N. Y.
Cochaud Wire Die Corp., New York.
F. Krause & Co., Inc., Jersey City, N. J.
Urdika Wire Die Co., N. Y. C.
Vianney Wire Die Wks., N. Y.

DIES—Recutting and Repolishing Machine
Wm. Haddow, Ossining, N. Y.

DIES—Rod and Tube Drawing
Carboloy Co., Inc., Detroit, Mich.
Master Wire Die Corp., N. Y.
Union Wire Die Corp., N. Y.

DIES—Tungsten Carbide
Bellet Diamond Die Works, N. Y.
Carboloy Co., Inc., Detroit, Mich.
Master Wire Die Corp., New York, N. Y.
Union Wire Die Corp., New York, N. Y.

DRAW BENCHES—
Scudder, E. J., Fdry & Machine Co., Trenton, N. J.
Torrington Mfg. Co., Torrington, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrel Fdry & Machine Co., Waterbury, Conn.

DRIVES—V-Belt
American Pulley Co., Philadelphia, Pa.

FLUXES—Soldering
Kester Solder Co., Chicago, Ill.

FURNACES—Lead Melting
John Robertson Co., Brooklyn, N. Y.

FURNACE—Non-Oxidizing Annealing
Charles F. Kenworthy, Inc., Waterbury, Conn.

GALVANIZING ENGINEER
W. H. Spowers, Jr., New York, N. Y.

GALVANIZING—Hot
Wallace G. Imhoff Co., Vineland, N. J.

GALVANIZING LADLES, PANS, POTS
Columbiana Boiler Co., Columbiana, O.

LATHES—Die Reaming
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.
The Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.

LIME—Pulverized
Amer. Lime & Stone Co., Bellefonte, Pa.

LUBRICANTS—Wire Drawing
R. H. Miller & Co., Homer, N. Y.
J. T. Robertson Co., Syracuse, N. Y.

MACHINE—Die Re-cutting and Polishing
Wm. Haddow, Ossining, N. Y.

MACHINERY—Armoring (Cable, Wire Hose)
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.

The "SILVER-SPLICE"

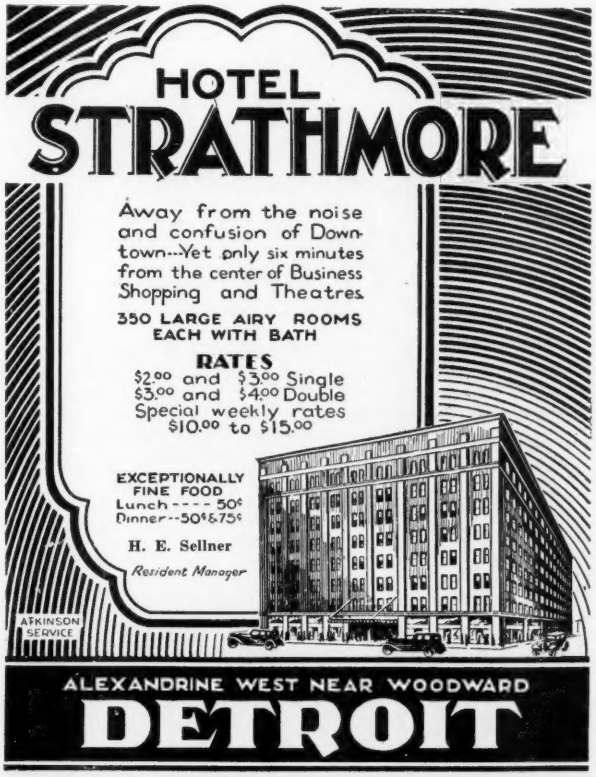
is used widely in telephone, telegraph and cable work.

Handy Silver Solders

make neat, strong wire-joints quickly. Their use saves time, money, labor and costly trouble.

Send for Bulletin WW.

HANDY & HARMAN
57 William Street
New York, N. Y.



Professional Directory

Listing in the Professional Directory is recommended to all engineers, engineering and construction firms and consultants seeking business with wire mills or plants utilizing wire in any form.

W. H. Spowers, Jr.
Consulting Engineer
551 Fifth Ave., N. Y. C.
Specializing in Galvanizing Plants Designed and Installed
Practical Engineering Advice
Vanderbilt 7895

THE WALLACE G. IMHOFF COMPANY
HOT GALVANIZING
Plants Installed Consulting Service
VINELAND, NEW JERSEY

Broden Construction Co.
Wire Mill and Cold Rolling Equipment
10255 Harvard Ave.
CLEVELAND, OHIO

ROBERT CLARK
Will Robert Clark please get in touch with the Editor, who has an important message for him.
WIRE & WIRE PRODUCTS
551 Fifth Ave., New York

INSULATING AND CABLE ENGINEERS
Learn all about impregnating compounds, what to use, when and where to use it, and why; all about dielectric losses and how to minimize them, electric behavior of gas films, and other matters of extreme importance in cable work. You can learn all this from Emanueli's new book
HIGH VOLTAGE CABLES
Just off the Press. 107 pages. 81 illustrations and charts
Price $2.50 postpaid from
551 Fifth Ave. WIRE & WIRE PRODUCTS New York, N. Y.

PATENTS
TRADE-MARKS
SERVICE

Without charge or obligation, we will inform you on any questions you may put to us touching on patent, trade-mark and copyright law. You may ask: "Should I protect myself by patent, or register under the trade-mark or copyright laws? What kind of a patent should I obtain?" and many other questions that may occur to you. These are vital points to consider and questions will be cheerfully answered.

Evidence of Conception
Before disclosing your invention to anyone send for blank form "EVIDENCE OF CONCEPTION" to be signed and witnessed. As registered patent attorneys we represent hundreds of inventors all over the United States and Canada in the advancement of inventions. The form "Evidence of Conception," sample, instructions relating to obtaining of patents and schedule of fees sent upon request.

Lancaster, Allwine & Rommel
Registered Patent Attorneys
473 OURAY BUILDING
WASHINGTON, D. C.
Originators of forms, "Evidence of Conception."

Capt. Robert N. Kunz, Procurement Division, Signal Corps., U. S. Army, Army Base, Brooklyn, N. Y.

E. W. Clark, General Electric Co., Schenectady, N. Y.

Paul M. Mueller, General Cable Corp., Rome, N. Y.

R. E. Bassett, American Brass Co., Waterbury, Conn.

Mrs. R. S. Spengel, Secretary-Treasurer, "Wire and Wire Products", New York, N. Y.

E. F. Gould, Anaconda Wire & Cable Co., Hastings-in-Hudson, N. Y.

Richard E. Brown, Secretary, Wire Association, and publisher, "Wire and Wire Products", New York, N. Y.

Increased Wire Duty Will Bar German Product

Exporters of wire netting, woven wire mesh and nail-making wire to the United States state the proposed increase in the American duty on these products under the flexible provision of the tariff will stop shipments of such products to the United States. They are urging counter action by raising the Germany duty on wire-making machinery and machine tools to prohibitive levels. German exports of wire to the United States in 1930 were about 27 per cent lower in value and 18 per cent smaller in tonnage than in 1929.

Plan Rise In Steel Wire

Independent American steel manufacturers will attempt to establish higher prices for wire products, it was announced early in March, following the recent mark-up of $2 a ton on all products except fencing material. This is the first increase in the prices of wire products in two years and is regarded as of more than ordinary signifiance for that reason. Mid-Western steel makers report the margin of profit now to be too small to permit a favorable showing of earnings.

Current buying is testing the new prices in strip steel to some extent, although the carryover into next quarter of unspecified tonnages will be large. Makers of wire rods are endeavoring to obtain an increase of $2 a ton for the second quarter.

BUYERS' GUIDE, Continued

Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.
Watson Machine Co., Paterson, N. J.

MACHINERY—Braiding
Fidelity Machine Co., Phila., Pa.
Mossberg Pressed Steel Corp., Attleboro, Mass.
New England Butt. Co., Providence, R. 1.

MACHINERY—Bunching
Amer. Insulating Mach'y Co., Phila., Pa.
Haskell-Dawes Machine Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Watson Machine Co., Paterson, N. J.

MACHINERY—Bundling
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.
Watson Machine Co., Paterson, N. J.

MACHINERY—Cable, Electric
New England Butt Co., Providence, R. I.
Torrington Mfg. Co., Torrington, Conn.
Watson Machine Company, Paterson, N. J.

MACHINERY—Chain Making
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Closing
Haskell-Dawes Mach. Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Torrington Mfg. Co., Torrington, Conn.
Watson Machine Co., Paterson, N. J.

MACHINERY—Coil Winding
Amer. Insulating Mach'y Co., Phila., Pa.
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.

MACHINERY—Coiling
Broden Const. Co., Cleveland, O.
Haskell-Dawes Mach. Co., Phila., Pa.
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.
Watson Machine Co., Paterson, N. J.

MACHINERY—Copper Wire Drawing and Rolling
Torrington Mfg. Co., Torrington, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrell Fdry & Machine Co., Waterbury, Conn.

MACHINERY—Cutting
American Insulating Mach'y Co., Phila., Pa.
Hallden Machine Co., Thomaston, Conn.
F. B. Shuster Co., New Haven, Conn.
Sleeper & Hartley, Worcester, Mass.

MACHINERY—Enameling
American Insulating Mach'y Co., Phila., Pa.

MACHINERY—Extruding
John Robertson Co., Brooklyn, N. Y.
Watson Machine Co., Paterson, N. J.

MACHINERY—Flat Wire
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.

MACHINERY—Forming
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.

MACHINERY—Galvanizing Wire
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Gang Winders
Watson Machine Co., Paterson, N. J.

MACHINERY—Insulating
American Insulating Machinery Co., Phila.
New England Butt Co., Providence, R. I.
Watson Machine Co., Paterson, N. J.

MACHINERY—Lead Stripping
John Robertson Co., Brooklyn, N. Y.

MACHINERY—Lock Washer
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Magnet Wire
American Insulating Mach'y Co., Phila., Pa.
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.

MACHINERY—Measuring Wire
New England Butt. Co., Providence, R. I.
Watson Machine Company, Paterson, N. J.

MACHINERY—Nail
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Panning
American Insulating Machinery Co., Phila.

MACHINERY—Pointing
Morgan Construction Co., Worcester, Mass.
E. J. Scudder Foundry & Machine Co., Trenton, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.
The Waterbury Farrell Foundry & Machine Co., Waterbury, Conn.

MACHINERY—Rivet
Waterbury-Farrell Fdry & Machine Co.,

MACHINERY—Rod Drawing
Morgan Const. Co., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrell Fdry & Machine Co., Waterbury, Conn.

MACHINERY—Rubber Strip Covering
American Ins. Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Watson Machine Co., Paterson, N. J.

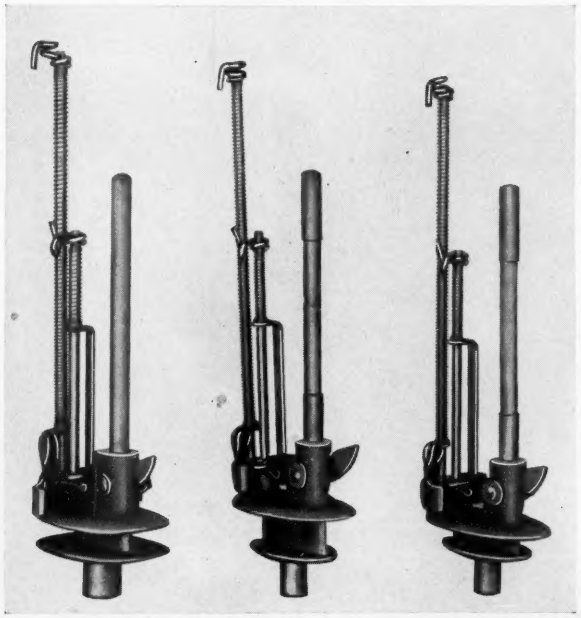
MACHINERY—Screw Wire
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Spooling
American Insulating Machinery Co., Phila.
Torrington Mfg. Co., Torrington, Conn.
Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Spring Making
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Staple
Sleeper & Hartley, Inc., Worcester, Mass.

Improved Mosspeed Braider Carriers



THE patented Mosspeed spring tension take-up makes it possible to speed up the Maypole-type of braiding machine, in many cases the effective speed being increased up to 80%. These higher speeds may be maintained with less wear and tear on both carriers and machines than slower speeds with old-style drop-weight carriers.

Tell us what machines you use. We will be glad to show you how Mosspeed Carriers may be used to increase your profits.

MOSSBERG
PRESSED STEEL CORP.
Attleboro, Massachusetts, U. S. A.
Greenville, S. C. Dallas, Texas
Selson Engineering Co., Ltd., London, Eng.

BUYERS' GUIDE, Continued

MACHINERY—Straightening
Hallden Machine Co., Thomaston, Conn.
F. B. Shuster, New Haven, Conn.
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.

MACHINERY—Stranding
American Insulating Mach'y Co., Phila Pa.
Haskell-Dawes Machine Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.
Watson Machine Co., Paterson, N. J.

MACHINERY—Strip Steel
Broden Const. Co., Cleveland, O.
Torrington Mfg. Co., Torrington, Conn.

MACHINERY—Swaging
Sleeper & Hartley, Worcester, Mass.
Waterbury-Farrell Foundry & Machine Co., Waterbury, Conn.

MACHINERY—Taping
Amer. Insulating Mach. Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Torrington Mfg. Co., Torrington, Conn.
Watson Machine Company, Paterson, N. J.

MACHINERY—Trolley Wire
Torrington Mfg. Co., Torrington, Conn.
Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Tube
Torrington Mfg. Co., Torrington, Conn.
Waterbury-Farrell Fdry. & Machine Co., Waterbury, Conn.

MACHINERY—Used
Crawford, F. H., Co., N. Y.

MACHINERY—Welding
Micro Products Co., Peoria, Ill.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Winding
American Insulating Mach'y Co., Phila., Pa.
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.
Watson Machine Co., Paterson, N. J.

MACHINERY—Wire Drawing
American Insulating Machinery Co., Phila.
Broden Const. Co., Cleveland, Ohio.
Morgan Construction Co., Worcester, Mass.
E. J. Scudder Foundry & Machine Co., Trenton, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Manufacturing Co., Torrington, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury Farrell Foundry & Machine Co., Waterbury, Conn.

MACHINERY—Wire Rope
New England Butt Co., Providence, R. I.
Watson Machine Company, Paterson, N. J.

MACHINERY—Wrapping Coils
Terkelsen Machine Co., Boston, Mass.

PACKING—Metallic Fibre
Hudson Wire Co., Ossining, N. Y.

POINTERS—Wire
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

POTS
Columbiana Boiler Co., Columbiana, O.

POTS—Lead Melting
John Robertson Co., Brooklyn, N. Y.

PRESSES—Lead Encasing
John Robertson Co., Brooklyn, N. Y.

PRESSES—Lead Extrusion
John Robertson Co., Brooklyn, N. Y.

PULLERS—Wire
E. J. Scudder Fdry. & Machine Co., Trenton, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.

PULLEYS AND SHEAVES
American Pulley Co., Philadelphia, Pa.

PUMPS—Hydraulic
John Robertson Co., Brooklyn, N. Y.

REELS AND SPOOLS—
American Pulley Co., Philadelphia, Pa.
R. B. Hayward Co., Chicago, Ill.
Hubbard Spool Co., Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.

REELS—Annealing
American Pulley Co., Philadelphia, Pa.

REEL AND TENSION STAND—
Sleeper & Hartley Inc., Worcester, Mass.

REEL CRUTCHES
Watson Machine Co., Paterson, N. J.

SOAPS—Wire Drawing
R. H. Miller Co., Homer, N. Y.
J. T. Robertson Co., Syracuse, N. Y.

SOLDER
Kester Solder Co., Chicago, Ill.

SOLDER—Silver
Handy & Harman, N. Y.

SPOOLS—Wire and Cable
American Pulley Co., Philadelphia, Pa.

TRUCKS
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

VULCANIZERS
Watson Machine Co., Paterson, N. J.

WIRE—Various Kinds
Hudson Wire Co., Ossining, N. Y.

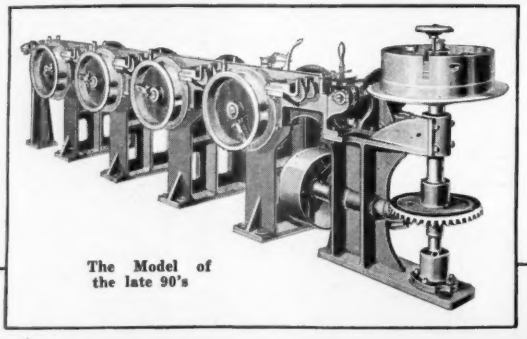
This is a carefully classified index of concerns who specialize in this industry and who advertise regularly in WIRE & WIRE PRODUCTS. Please mention WIRE when writing to these firms.

WATERBURY-FARREL TANDEMS

Three Decades Perfecting Continuous Wire Drawing Machines

We thought the old machines were pretty good in the old days (and they were) but times have changed. Today we offer not a better method nor a new principle, but—a far better machine that meets in eloquent fashion every demand of the present day—

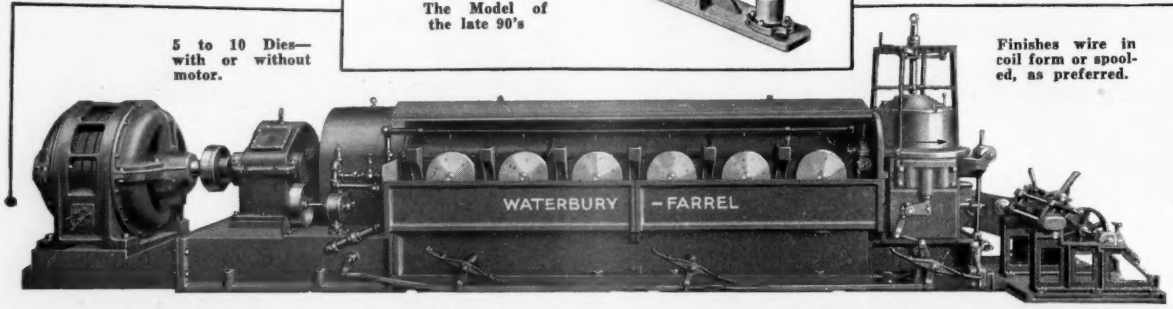
High Speed
Low Operating Cost
Mechanical Efficiency



The Model of the late 90's

5 to 10 Dies—with or without motor.

Finishes wire in coil form or spooled, as preferred.



No. 1 Machine. Forced feed lubrication. Ball Bearings throughout. Starting size, 5/16" copper rod.

The Waterbury Farrel Foundry and Machine Company

Home Office and Works: Cottage Place, Waterbury, Connecticut **Western Sales Office: Cleveland, Ohio**

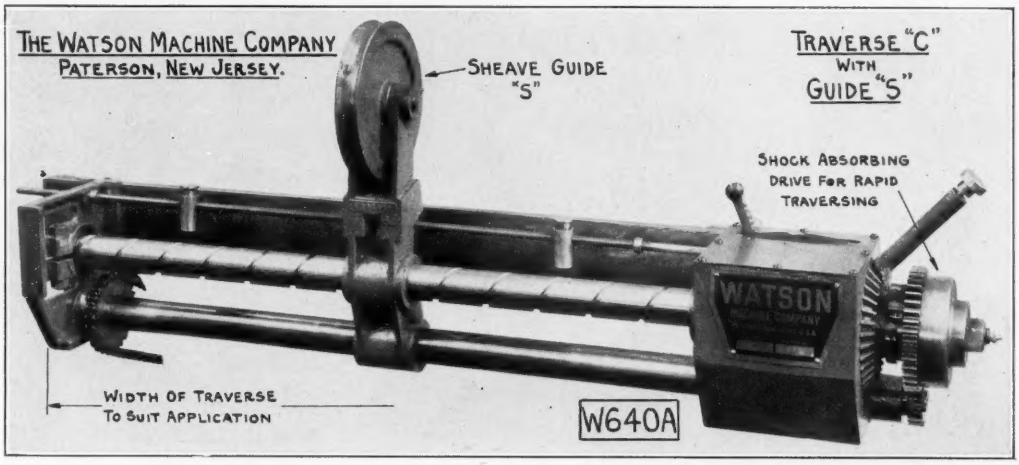
THE WATSON MACHINE COMPANY

ESTABLISHED 1845

PATERSON, NEW JERSEY, U. S. A.

ENGINEERS - FOUNDERS - MACHINISTS

TRAVERSES "C" *and* GUIDES



This style of Traverse is intended for use on Takeups for Reels of 60″ diameter or less, and is capable of the high tensions usually present on Wire Rope Stranders.

Adjustments of end points (for width of reel), lay and transfer of power, to hand control, are quickly and easily made, while stationary or operating. Lay is varied by Swing Lever at side of box having spring lock handle, and has a variation ratio of 16 to 1.

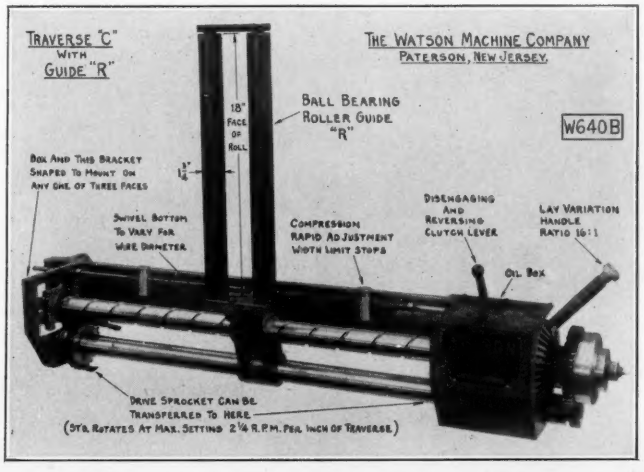
On operations, such as saturating, where high rate of traverse is present, the shock absorbing mechanism eliminates rapid wear of parts, due to shock.

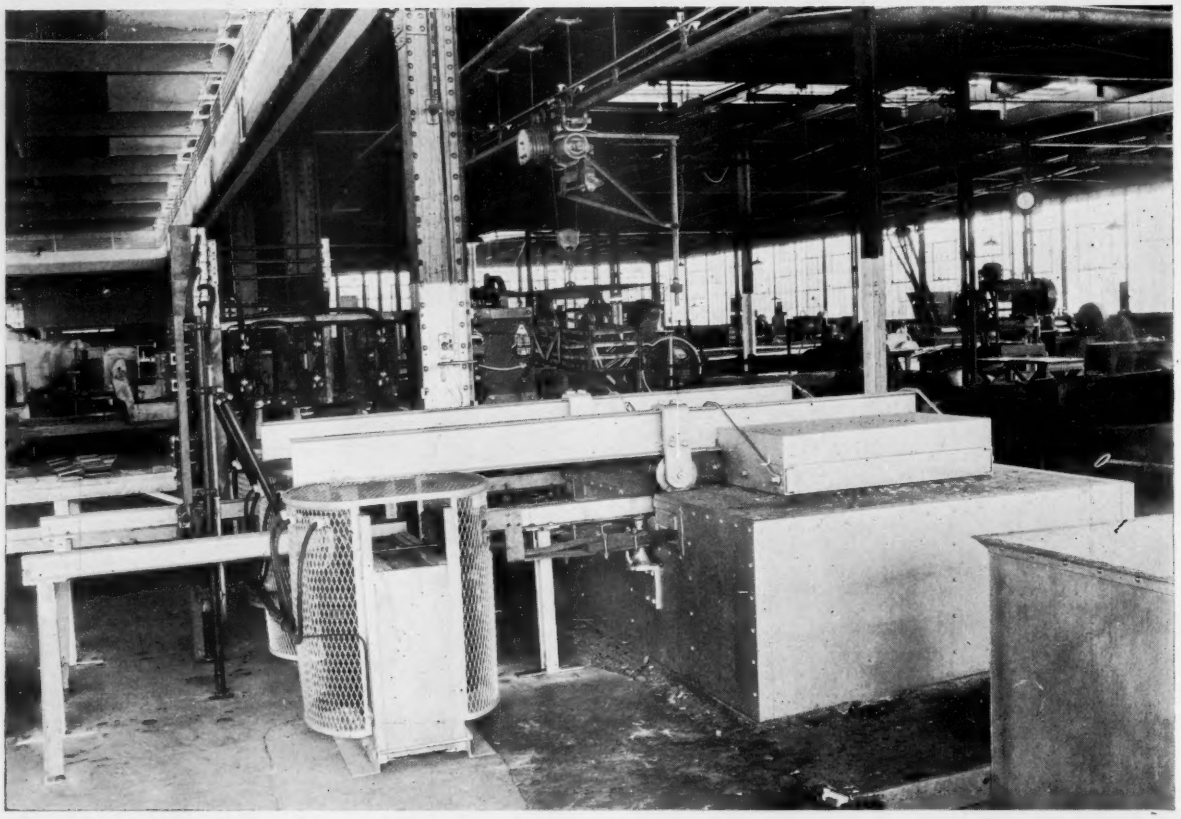
The Box and End Frame can be mounted on any of their three sides. Unit can be placed on top of "A" Frames, if Takeup Frames are not suitable for reception.

The installation of this unit on existing Takeup is easily accomplished.

In ordering it is essential that the direction of rotation of the sprocket driven shaft be given.

This unit is used by us on Gang Winders for spools up to 16″ diameter.


TRAVERSE "C" WITH GUIDE "R"
THE WATSON MACHINE COMPANY
PATERSON, NEW JERSEY.
18" FACE OF ROLL
BALL BEARING ROLLER GUIDE "R"
W640B
BOX AND THIS BRACKET SHAPED TO MOUNT ON ANY ONE OF THREE FACES
SWIVEL BOTTOM TO VARY FOR WIRE DIAMETER
COMPRESSION RAPID ADJUSTMENT WIDTH LIMIT STOPS
DISENGAGING AND REVERSING CLUTCH LEVER
LAY VARIATION HANDLE RATIO 16:1
OIL BOX
DRIVE SPROCKET CAN BE TRANSFERRED TO HERE
(STR. ROTATES AT MAX. SETTING 2¼ R.P.M. PER INCH OF TRAVERSE.)



A NEW ELECTRIC FURNACE THAT DOES BRIGHT ANNEALING ECONOMICALLY

The above furnace bright anneals 500 pounds of metal in five minutes, so that no pickling is necessary, and to such a low hardness that 10-20 percent less power is used on further drawing operations. Other unique features of this new furnace are:

No heating elements to burn out.

Any temperature from 275 to 2500°F.

Lower heating cost than with fuel-fired furnaces.

Accurate and dependable temperature control from a single thermocouple.

All the heat in the bath; no excess temperature necessary to drive the heat thru the pot.

Quicker heating, more uniform heating, and greater output than in any other furnace of the same size.

No smoke, flame, noise or combustion products—eliminates dirt and danger; no fuel or air piping—can be installed near your machines.

THE BELLIS HEAT TREATING CO.
Branford, Conn.